THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. XVII. of Vol. II., 1913. No. 4704. Vol. CLXXXV. LONDON, SATURDAY, OCTOBER 25, 1913. Pp. 152—Price 6d.

ROYAL SOCIETY OF MEDICINE.

1, WIMPOLE STREET.

For DIARY of MEETINGS see page 1232.

Demy 8vo Pp. xvi.+194. Price 6s. net.

DIET and HYGIENE in DISEASES of the SKIN. By L. D. BULKLEY, A.M., M.D., Physician to the New York Skin and Cancer Hospital.

"We recommend this book as useful in daily work. It is written by a practical physician."—LANCET.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Now Ready. Sixth Edition. Revised and Enlarged. Pp. xxviii.+432 Price 10s. 6d. net.

TREATMENT by HYPNOTISM and SUGGESTION. By C. LLOYD TUCKEY, M.D. Aberd.

THE LANCET says:—"We consider that this unprejudiced study of an important subject should be in the hands of every medical man."

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

DISEASES OF THE STOMACH.

By W. SOLTAU FENWICK, M.D.

CANCER AND TUMOURS. Royal 8vo. 10s. 6d.

ULCER AND ITS CONSEQUENCES. Royal 8vo. 10s. 6d.

London: J. & A. Churchill, 7, Great Marlborough-street, W.

DISORDERS OF DIGESTION IN CHILDHOOD. Demy 8vo, 10s. 6d.

DYSPEPSIA OF PHTHISIS. Demy 8vo. 6s.

London: H. K. Lewis, 136, Gower-street, W.C.

New Work. Fully Illustrated. 10s. net.

BY P. LOCKHART MUMMERY, F.R.C.S.

DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT.

Bristol: J. Wright & Sons, Ltd.

London: Simpkin, Marshall & Co., Ltd.

Demy 8vo. Cloth. 2s. 6d. net. 53 Illustrations.

RADIUM AND CANCER.

By LOUIS WICKHAM, M.V.O., and PAUL DEGRAIS. Translated by A. and A. G. BATEMAN, M.B., C.M.

London: Adlard & Son, Bartholomew Close.

102 Illustrations. 10s. 6d. net.

BY F. SWINFORD EDWARDS, F.R.C.S.,

DISEASES OF THE RECTUM, ANUS, AND SIGMOID COLON.

London: J. & A. Churchill, 7, Great Marlborough-street.

A NEW BOOK ON NEW LINES. 7s. 6d. net.

77 Original Illustrations, 44 being in Colour.

THROAT, NOSE, AND EAR: DISEASES OF.

FOR PRACTITIONERS AND STUDENTS.

By W. G. PORTER, M.B., B.Sc., F.R.C.S.,

Surgeon to the Eye, Ear, and Throat Infirmary, Edinburgh, &c.

"One cannot but admire the variety of the information given and its soundness. ..... Eminently suited for the purpose for which it is designed."—JOURNAL OF LARYNGOLOGY.

Bristol: Wright & Sons Ltd. London: Simpkin & Co. Ltd.

OPERATIVE TREATMENT of FRACTURES.

By Sir WILLIAM ARBUTHNOT LANE, Bart., M.S.

In large clear type. Demy 4to. 7s. 6d.

By the same Author.

CLEFT PALATE AND HARE LIP. 5s.

"The Author makes out a clear case for early and almost immediate operation. To sum up, he has absolutely proved his contention, and rendered it quite clear, that early operation is the right course on every ground, developmental and otherwise; and further, that delay in performing staphylorrhaphy until the third to the sixth year is fraught with most harmful results, and should not be permitted."

—BRITISH MEDICAL JOURNAL, Jan. 27th, 1906.

The Medical Publishing Company, Ltd., 22½, Bartholomew Close, E.C.

By the same Author.

THE OPERATIVE TREATMENT OF CHRONIC CONSTIPATION.

Nisbet & Co., 22, Berners-street, W.

ON DISEASES of the LUNGS and PLEURÆ,

including Tuberculosis and Mediastinal Growths.

By Sir RICHARD DOUGLAS POWELL, Bart., K.C.V.O., M.D.Lond., F.R.C.P., Physician in Ordinary to H.M. the King; and P. HORTON-SMITH HARTLEY, C.V.O., M.D. Camb., F.R.C.P.

With 29 Plates (six coloured) from Original Drawings, and 53 Illustrations. Fifth Edition. Demy 8vo. 21s. net; inland postage 6d., abroad, 1s. 4d.

"No affection of the lungs has escaped the notice of the writers."—THE LANCET.

London: H. K. Lewis, 136, Gower-street, W.C.

H. K. LEWIS'S NEW PUBLICATIONS.

HYGIENE AND PUBLIC HEALTH. Fifth Edition.

By L. C. PARKES, M.D., and H. R. KENWOOD, M.B. Ed. Demy 8vo. 12s. 6d. net; postage 6d., abroad 1s.

MANUAL OF OPERATIVE SURGERY. Sixth Edition.

By J. F. BINNIE, A.M., C.M. Royal 8vo. 30s. net; inland postage 7d.

DISEASES OF THE STOMACH. Including Dietetic and Medicinal Treatment. By G. R. LOCKWOOD, M.D. Royal 8vo. 25s. net; inland postage 7d.

PRACTICAL BACTERIOLOGY, BLOOD WORK, AND ANIMAL PARASITOLOGY. By E. R. STITT, M.D. Third Edition. Post 8vo. 6s. 6d. net; postage 4d., abroad 8d.

London: H. K. Lewis, 136, Gower-street, W.C.

See Advertising Page 7 for

SAUNDERS' GOOD BOOKS

FOR THE GENERAL PRACTITIONER.

W. B. Saunders Company, 9, Henrietta-st., London, W.C.

By ERNEST CLARKE, M.D., B.S., F.R.C.S. Eng., Senior Surgeon to the Central London Ophthalmic Hospital; Consulting Ophthalmic Surgeon to the Miller General Hospital.

ERRORS OF ACCOMMODATION AND REFRACTION OF THE EYE.

Third Edition. Pp. x.+228. With 86 Illustrations and Coloured Plates. Price 5s. net.

"This volume is the very best of the class that goes into everything with care and thoroughness. ..... The book merits the highest commendation."—CANADA LANCET.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

"ROSE and CARLESS' SURGERY

is a trustworthy guide for the student and the practitioner."—LANCET.

Eighth Edition. Pp. xii.+1406. With 12 coloured Plates and 581 Illustrations. Price 21s. net.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Third Edition. Pp. viii.+134. With 22 Illustrations. Price 3s. 6d. net.

ANÆSTHETICS. By J. BLUMFELD, M.D., Senior Anæsthetist to St. George's Hospital.

"A truly excellent manual."—LANCET.

"Dr. Blumfeld's handbook of anæsthetics leaves little to be desired. It is packed with useful information and practical hints."—BRIT. M. J.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Fourth Edition, with 57 Illustrations, including numerous original Photo-micrographs. 10s. 6d. net.

THE NUTRITION OF THE INFANT.

By RALPH VINCENT, M.D.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

WIDE RESECTION OF THE BLADDER IN VESICAL GROWTH.

New Work. With 4 Plates. Cloth. 3s. 6d. net

By E. HURRY FENWICK, F.R.C.S.,

Professor of Urology at the London Hospital; Vice-President of International Society of Urology, and President to its Second Congress.

London: Adlard & Son, Bartholomew-close.

For

Ulcer of the Leg

"Sozojodol"-Hydrargyrum

in 1% ointment after the formula.

Rp. "Sozojodol"-Hydrarg. 1·0 or 5 grains.
Lanolin ... ... 90·0 or 7 drs.
Vaselin flav. ad ... 100·0 or 1 oz.
Specially worthy of recommendation if spread to the thickness of the back of a knife.

"On each occasion both I and the patient were pleasantly surprised to find that ulcers of the leg which previously had required treatment for months to cure them, responded in so short a time by healing smoothly." For after-treatment 1% dusting powder: "Sozojodol"-Hydrarg. 1 part, Talc. Venet. 99 parts.

"Sozojodol"-Hydrarg. is so slightly toxic, that even large wounded surfaces may be treated with 1% dilutions.

Vademecum of Sozojodol-Treatment and trial samples gratis from

H. TROMMSDORFF, chem. works,
AIX-LA-CHAPELLE 19 B.

Without symptoms of irritation or by-effects, internal treatment with

Merjodin

(a practical and discreet preparation in tablet form) exerts the double effect of Mercury and Iodine, to which "perhaps a part of its favourable action must be attributed."

(Handbuch d. ges. Therapie, 1910, Band 5.)

In

Syphilis

at a daily dosage of 3 × 1-4 tablets it exerts "a powerful effect on manifest symptoms," aids every other remedy, and especially Salvarsan.

(Wiener Kl. Rundschau, 1911, No. 11.)

Original bottles of 50 tablets. Procurable only from the chemist on a physician's prescription.

Literature and trial samples free to members of the medical profession on application to

H. TROMMSDORFF, chem. works,
AIX-LA-CHAPELLE No 19.

Agents: ZIMMERMANN & CO. (Chemicals) Ltd., 9 & 10, St. Mary-at-Hill, LONDON, E.C.

By Royal Warrants

To H.M. King George V. To H.M. Queen Alexandra.

Jeyes' Disinfectants

(Holders of Royal Warrant during three successive Reigns)

May be obtained in the form of

FLUID, POWDER AND SOAP.

JEYES' FLUID (Safe and Efficient)—In Bottles, Tins, Drums and Casks.

JEYES' POWDER—In Canisters, Packets, Bags and Casks.

JEYES' SOAPS—In Bars and Tablets, for the Household and Toilet.

JEYES' SPECIAL FLUID—CYLLIN—The strongest fluid Disinfectant on the Market.

CYLLIN (MEDICAL).

Rideal-Walker Co-efficient for B. typhosus. 28 to 30. Indispensable in Hospital and Private Practice.

CYLLIN MEDICAL CAPSULES (Palatinoids).

Containing 3 m. each, are small, easily swallowed, and give excellent results in stomachic and intestinal antisepsis.

In bottles of 25, 50, and 100.

Jeyes' Sanitary Compounds Co., Ltd., 64, Cannon Street, London, E.C.

THE LANCET.

No. 4704. Vol. CLXXXV. LONDON, SATURDAY, OCTOBER 25, 1913. Pp. 152.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

INTRODUCTORY LECTURE
on the Causes and Symptomatology of Impaired Retinal Activity. Delivered at the Royal Eye Hospital, London, on Oct. 13th, 1913. By GEORGE A. BERRY, M.B. Edin., LL.D., V.-P.R.C.S. Edin., Honorary Surgeon Oculist to H.M. the King in Scotland; Consulting Ophthalmic Surgeon, Royal Infirmary, Edinburgh, &c.... 1167

ORIGINAL ARTICLES.

Symmetrical Necrosis of the Cortex of the Kidneys Associated with Suppression of Urine in Women Shortly After Delivery. By H. D. ROLLESTON, M.D. Cantab., F.R.C.P. Lond., Senior Physician, St. George's Hospital; Physician, Victoria Hospital for Children 1173

The Effect of Altitude on Blood Volume, together with Further Observations on the Blood in Warm-blooded and Cold-blooded Animals. By GEORGES DREYER, M.D., Professor of Pathology in the University of Oxford; and E. W. AINLEY WALKER, D.M., Lecturer in Pathology in the University of Oxford..... 1175

Veronal Poisoning. By WILLIAM HENRY WILLCOX, M.D., B.Sc.Lond., F.R.C.P. Lond., F.I.C., D.P.H., &c., Physician to St. Mary's Hospital, London; Senior Scientific Analyst to the Home Office, England 1178

A Clinical Study of the Chief Function of the Peritoneum. By JOHN HOWELL, M.B., B.S. Lond., F.R.C.S. Eng., Honorary Surgeon to the Cheltenham General Hospital, &c..... 1181

The Experimental Transmission of Disseminated Sclerosis to Rabbits. By W. E. BULLOCK, M.D. Edin., B.Sc. Lond., formerly McCunn Scholar and Assistant to the Professor of Pathology, University of Edinburgh; Assistant, Imperial Cancer Research Fund, London.—*(Illustrated)*..... 1185

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

Further Notes on "Post-Anæsthetic" Vomiting. By J. D. MORTIMER, M.B. Lond., F.R.C.S. Eng., Anæsthetist, Royal Waterloo Hospital, St. Peter's Hospital for Stone, &c..... 1186

A Note on the Tuberculin Reaction. By EDWARD E. PREST, M.A., M.D. Cantab., Medical Superintendent of the Ayrshire Sanatorium..... 1187

MEDICAL SOCIETIES.

ROYAL SOCIETY OF MEDICINE:
SPECIAL MEETING OF FELLOWS:—Cultural Methods in the Study of Diseases of Unknown Etiology..... 1187
SURGICAL SECTION:—The Selection of the Incision in Cœliotomy.—Pyelo-radiography 1188
SECTION OF OBSTETRICS AND GYNÆCOLOGY:—Complete Absence of the Internal Genitalia.—Pyosalpinx of an Accessory Tube.—Adnexal Tuberculosis.—The Serum Diagnosis of Pregnancy..... 1189
SECTION OF OTOLOGY:—Exhibition of Cases..... 1190
DERMATOLOGICAL SECTION: Exhibition of Cases and Specimens..... 1190
LIVERPOOL MEDICAL INSTITUTION: Intestinal Obstruction..... 1191
UNITED SERVICES MEDICAL SOCIETY: Some Problems of Mobilisation specially affecting the Royal Army Medical Corps.. 1191

REVIEWS AND NOTICES OF BOOKS.

The Nervous and Chemical Regulators of Metabolism. Lectures by D. Noël Paton, M.D., B.Sc..... 1192

The Principles and Practice of Medical Hydrology: being the Science of Treatment by Waters and Baths. By R. Fortescue Fox, M.D. Lond. 1192

Manual of Bacteriology. By Robert Muir, M.A., M.D. Edin., &c.; and James Ritchie, M.A., M.D. Edin., &c. Sixth edition..... 1193

How to Diagnose Small-pox: A Guide for General Practitioners, Post-graduate Students, and Others. By W. McC. Wanklyn, B.A. Cantab., M.R.C.S. Eng., &c. 1193

Action des Rayons X sur les Glandes Surrénales. By Dr. Paul Cottenot 1194

Tuberculin in Diagnosis and Treatment. By Francis Marion Pottenger, A.M., M.D., LL.D..... 1194

The Student's Handbook of Gynæcology. By George Ernest Herman, M.B. Lond., F.R.C.P. Lond., &c. Second edition. With additions by R. Drummond Maxwell, M.D. Lond., F.R.C.S. Eng.... 1194

A Manual of School Hygiene. By Edward W. Hope, M.D. Edin., Edgar A. Browne, F.R.C.S. Edin., and C. S. Sherrington, M.D. Cantab., F.R.S..... 1194

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein..... 1195

Maladies du Rachis et de la Moelle. Par Maurice Auvray et Albert Mouchet..... 1195

Nervous Breakdowns and How to Avoid Them. By Charles D. Musgrove, M.D. Edin 1195

How to Succeed as a Trained Nurse. Edited by Sir Henry Burdett, K.C.B., K.C.V.O... 1195

NEW INVENTIONS.

The "Signal" Vision Test Type.—*(Illustrated)*..... 1196

A Normal Adjustable Stethoscope.—*(Illustrated)*..... 1196

An Improved Mouth Gag.—*(Illustrated)*..... 1196

LEADING ARTICLES.

A COUNTY COURT JUDGE AND MEDICAL REFEREES..... 1197

NEW ASPECTS OF DIABETES... 1198

ANATOMICAL NOMENCLATURE AND THE MEDICAL STUDENT 1199

ANNOTATIONS.

Dr. Hideyo Noguchi's Demonstration..... 1200

Insured Patients and Proprietary Medicines..... 1200

Childbirth in the Eighteenth Century..... 1201

The Period of Gestation..... 1201

Altitude and Blood Volume ... 1202

An Instructive Mistake 1202

Paroxysmal Œdema of the Lungs..... 1203

Moonlight and Decay..... 1203

Intussusception of the Stomach and Duodenum Due to a Gastric Polypus... 1204

Method for Determining the Toxicity of Coal-Tar Disinfectants..... 1204

Treatment of Pyorrhœa Alveolaris..... 1204

Tuberculosis in Trinidad and Tobago..... 1205

PUBLIC HEALTH.

Annual Reports of Medical Officers of Health..... 1207

Reports of School Medical Officers 1208

VITAL STATISTICS:
Health of English Towns ... 1209
Health of Scotch Towns..... 1209
Health of Irish Towns..... 1210
Vital Statistics of London during September, 1913 ... 1210
Analysis of Sickness and Mortality Statistics in London during September, 1913..... 1211

SPECIAL ARTICLES.

The London County Council and Medical Affairs: The Local Government Board and the Treatment of Tuberculosis.—Proposed Licensing of Lying-in Homes..... 1205

Medicine and the Law: Sloman *v.* The British Medical Association and Others... 1206

Asylum Reports..... 1207

The Services..... 1212

Medical Practice under the Insurance Act. XXIV.—Nottingham: The Panel Doctors and the Women Workers.—*(To be continued)* 1214

Manchester..... 1215

Liverpool 1216

Bristol and Western Counties 1216

Birmingham 1217

Scotland 1217

Ireland 1218

Vienna..... 1219

Paris 1224

OBITUARY.

Sir John Batty Tuke, M.D. Edin., F.R.C.P. Edin., F.R.S.E., LL.D., D.Sc., formerly Representative of the Royal College of Physicians of Edinburgh on the General Medical Council and M.P. for the Universities of Edinburgh and St. Andrews, &c.—*(With Portrait)*..... 1220

Professor Robert Kutner, M.D. Berlin, C.V.O., Director of the Kaiserin Friedrich Haus, Berlin..... 1223

Deaths of Eminent Foreign Medical Men..... 1223

CORRESPONDENCE.

The Medical Curriculum (Dr. H. Charles Cameron)..... 1224

The Treatment of Syphilis (Dr. Robert S. Wainewright) 1224

Claims and Consultations (Mr. J. J. Scanlan) 1225

The National Insurance Act and Medical Referees (Mr. Albert Benthall)..... 1225

National Insurance Act: The Difficulty of Certificates (Dr. T. Cuming Askin) 1226

The Case of Mr. H. T. Hamilton (Dr. W. H. Gimblett)..... 1226

The Examination in Anatomy for the Fellowship of the Royal College of Surgeons of England (Prof. G. Elliot Smith) 1227

The Dangers of the Street..... 1227

The Use of Colour in Bookbindings (Mr. F. J. R. Carulla)..... 1231

THE NATIONAL INSURANCE ACT.

The Forfarshire Insurance Committee and Night Visits 1227

Contract Practice in Mid-Derbyshire..... 1227

The New Drug Tariff..... 1227

MEDICAL NEWS.

Anglo-American Continental Medical Society..... 1199

Royal Dental Hospital of London 1220

Ranking Memorial, Tunbridge Wells 1220

School Medical Service Officers 1223

Pass list of the University of Glasgow: Third and Fourth Examinations..... 1228

Foreign University Intelligence 1228

Society for Relief of Widows and Orphans of Medical Men 1228

Boric Acid in Sausages 1229

Royal Sanitary Institute 1229

Donations and Bequests..... 1229

Post Graduate College, West London Hospital..... 1229

Centenarians..... 1229

Books, &c., received 1229

Appointments..... 1229

Vacancies..... 1230

Births, Marriages, and Deaths 1230

Notes, Short Comments, and Answers to Correspondents 1231

Medical Diary..... 1232

Meteorological Readings..... 1233

Acknowledgment of Communications received 1234

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

PAGE

ADLARD & SON:—
Fenwick .. Wide Resection of the Bladder .... Cover i
Wickham & Degrais .. Radium and Cancer Cover i

ARNOLD:—
Cannon .... Digestion 5
Diseases of Children 5
Guthrie .... Blood-Vessel Surgery 5
Hill ..... Caisson Disease, &c.. 5
Ledingham & Arkwright. Carrier Problem in Infectious Disease.. 5
Legge & Goadby .. Lead Poisoning, &c.... 5
McCay .... Protein Element in Nutrition 5
McIntosh & Fildes .... Syphilis 5
Macleod .... Diabetes 5
Text-Book of General Pathology .. 5

BAILLIERE, TINDALL & COX:—
Bigg ..... Indigestion 9
Blumfeld .. Anæsthetics .. Cover i
Bulkley .... Diet and Hygiene Cover i
Clarke, E. .. Errors of Accommodation, &c. .. Cover i
Freyer .... Enlargement of the Prostate 9
" .... Urinary Organs 9
Rose & Carless .. Surgery ..... Cover i
Tuckey .... Treatment by Hypnotism, &c... Cover i
Vincent .... The Nutrition of the Infant ..... Cover i

PAGE

BALE, SONS & DANIELSSON:—
Bandelier & Roepke .. A Clinical System of Tuberculosis..... 9
" Tuberculin in Diagnosis & Treatment 9
Biedl ..... The Internal Secretory Organs 9
De Quervain Clinical Surgical Diagnosis 9
Garre & Quincke.. Surgery of the Lung.. 9
Loewenfeld. Conjugal Happiness.. 9
Lohmann .. Disturbance of the Visual Functions .. 9
Lorenz & Saxl ..... Orthopædics..... 9
Römer .... Epidemic Infantile Paralysis..... 9
Thompson . Compendium of the Pharmacopœias, &c. 9

CASSELL & CO:—
Morris, Sir M..... Diseases of the Skin.. 9

CHURCHILL, J. & A.:—
Berry & Legg .... Hare Lip and Cleft Palate 5
Bloxam .... Chemistry 6
Cripps .... Cancer of the Rectum 9
" .... Diseases of Rectum.. 9
Dreaper .... Chemical Research .. 6
Eden ..... Midwifery 6
" .... Gynæcology 6
Edwards .. Diseases of Rectum, &c. ..... Cover i
Fenwick .. Cancer and Tumours ..... Cover i
" .. Ulcer and its Consequences .. Cover i

PAGE

CHURCHILL—(Continued).
Firth ..... Hygiene 6
Jellett..... Midwifery 6
Parsons .... Diseases of the Eye.. 6
Pollard .... Minor Surgery, &c.. 6
Robin ..... Tuberculosis 6
Swayne & Swayne .. Obstetric Aphorisms. 8
Text Book of Physics 6
Thorne, Bezly .... Schott Nauheim Treatment of Heart 9

LEWIS:—
Binnie..... Operative Surgery Cover i
Fenwick .. Disorders of Digestion, &c. .... Cover i
" .. Dyspepsia of Phthisis Cover i
Lockwood .. Diseases of Stomach Cover i
Parkes & Kenwood . Hygiene and Public Health ..... Cover i
Powell, Sir R. D., & Hartley Diseases of the Lungs and Pleuræ.. Cover i
Stitt..... Practical Bacteriology ..... Cover i

MACMILLAN & CO.:—
Adami & McCrae .. Pathology 3
Ballance .. Cerebral Decompression in Ordinary Practice 9
Hewitt, Sir F. W.. Anæsthetics 3
Milligan & Wingrave. Diseases of the Ear.. 3
New System of Medicine 3
Paton ..... Metabolism 3

PAGE

MACMILLAN—(Continued).
Rolleston .. Diseases of the Liver, &c. 5
Savage .... Milk and the Public Health 5
System of Gynæcology 5

MEDICAL PUBLISHING CO.:—
Lane, Sir W. A.. Operative Treatment of Fractures. Cover i
" Cleft Palate and Hare Lip ..... Cover i

NISBET & CO.:—
Lane, Sir W. A.. Treatment of Chronic Constipation. Cover i

SAUNDERS COMPANY:—
Böhm & Painter .. Massage 7
Brill ..... Psychanalysis 7
Carter..... Diet Lists 7
Dercum .... Mental Diseases 7
Faught .... Blood-Pressure 7
Norris.... Gonorrhœa in Women 7
Saunders' Good Books for the General Practitioner .... Cover i

WRIGHT & SONS (Bristol):—
Mummery .. Diseases of the Colon Cover i
Porter..... Throat, Nose, and Ear ..... Cover i

MEDICAL LIBRARIES, &c.:—
Behnke—Stammering..... 9
Ketley—Stammering..... 9
Matthews Bros.—
Wood: Application of Trusses 9

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Argyle and Bute Asylum, Lochgilphead 73
Birmingham Maternity Hospital.. 71
Bollingbroke Hosp., Wandsworth 71
Bradford Children's Hospital 72
Bradford Union 74
Brighton Throat and Ear Hospital 70
Bristol Royal Infirmary..... 71
Central London Throat and Ear Hospital 72
Cheltenham General Hospital 72
City Fever Hospital, Birmingham 74
City of Liverpool—Parkhill Hosp. and Sanatorium 72
City of Westminster Union..... 73
Durham County Asylum 71
East London Hos. for Children, Shadwell 71
East Sussex County Council Education Committee 74
East Sussex Hospital, Hastings .. 70
Elder Dempster & Co., Liverpool.. 74
Essex Education Committee 71
Evelina Hospital for Sick Children 72
Fermanagh County Hosp., Enniskillen..... 70
Gateshead Asylum 72
Govan District Asylum, Crookston 73
Holborn Union 73
Holloway Sanatorium Hospital for the Insane 70
Joint Counties Asylum, Carmarthen 73
Kensington Dispensary, &c..... 73
Kent County Asylum, Maidstone .. 73
King Edward VII. Welsh National Memorial Association..... 73
King Edward VII.'s Hos., Cardiff. 71
Lancashire County Asylum, Winwick 74
Leeds Public Dispensary..... 71
Leyton, Walthamstow, and Wanstead Children's Hospital 73
London County Asylum, Hanwell.. 74
London Throat Hospital, Great Portland-street 72
Macclesfield General Infirmary .. 72
Manchester Northern Hospital for Women and Children 70
Municipality of Colombo 72
Northampton County Asylum 70
Northamptonshire Education Committee 73
Nottingham General Hospital 72
Oxford County Asylum, Littlemore 70
Paddington Infirmary 76
Prince of Wales's Gen. Hospital, Tottenham 73
Queen Charlotte's Lying-in Hosp.. 74
Royal Berkshire Hosp., Reading .. 74
Royal Free Hos., Gray's Inn-road. 72
Royal Hospital, Richmond, Surrey 73
Royal Infirmary, Hull..... 71
Royal Infirmary, Sheffield 71
Royal Portsmouth Hospital 73
Royal Sussex County Hospital.... 71
St. Giles Infirmary, Camberwell .. 74
St. Mary's Hospital for Women and Children, Plaistow..... 71
Scarborough Hos. and Dispensary 70
South Devon and East Cornwall Hospital, Plymouth..... 71

PAGE

APPOINTMENTS—(Continued).
South London Hospital for Women 73
University Coll. Hos. Med. School 73
University of Durham College of Medicine, Newcastle-upon-Tyne. 71
University of Glasgow 73
Victoria Hos. for Children, Chelsea 72
West Bromwich and District Hos. 71
West Herts Hospital, Hemel Hempstead 70
West London Hospital 71
Western Ophthalmic Hospital 73
Whitechapel Union Infirmary 72
Worcestershire County Asylum, Bromsgrove 73
York County Hospital 72
York Dispensary 70

ASSISTANCIES, MEDICAL..... 74

ASYLUMS, HOMES, &c.:—
Ashwood House, Kingswinford .. 64
Association of Medical Men Receiving Resident Patients 70
Barnsley Hall, Bromsgrove 64
Barnwood House Hospital 65
Bishopstone House, Bedford..... 64
Bootham Park, York 64
Broadlands, Medstead 70
Brunton House, Lancaster 70
Buntingford House Retreat, Buntingford 67
Camberwell House, Peckham-road 64
Cheadle Royal 65
Clarence Lodge, Clapham-park .. 64
Colthurst House, Alderley Edge .. 68
Coppice, The, Nottingham 65
Dalrymple House, Rickmansworth 67
Dartmoor Sanatorium 68
David Lewis Colony, Alderley Edge 64
Duff House, Banff..... 34
Ghyllwoods 67
Grove House, Church Stretton.... 65
Grove, The, Catton, Norwich..... 65
Haslemere Nursing Home 70
Haydock Lodge, Newton-le-Willows 68
Haynes, Brentwood..... 70
Heigham Hall, Norwich 64
Home for Epileptics, Maghull 68
Inverurith Lodge Sanatorium, Colinsburgh 67
Kingsdown House, Box..... 64
London Fever Hospital..... 65
Maison de Santé de Glain-lez-Liége (Belgium) 70
Malling Place, Kent 65
Melbourne House, Leicester 68
Mendip Hills Sanatorium 68
Meyrick, Brighton 70
Middleton Hall, Co. Durham..... 64
Moat House, Tamworth 65
Mount Vernon Hospital for Consumption 67
Mundesley Sanatorium 68
Nordrach-on-Dee, Banchory 68
Northumberland House, Finsbury-park 64
Northwoods House, Winterbourne 68
Norwood Sanatorium, Ltd..... 66
No. 584, L.O., Strand 70
No. 592, L.O., Strand 70
Oscaig Island, Heybridge..... 67

PAGE

ASYLUMS—(Continued).
Peckham House..... 66
Pendyffryn Hall Sanatorium, Nordrach-in-Wales 68
Plympton House, Plympton 65
Portsmouth Corporation Mental Hospital 64
Rev. Mother, Honor Oak 70
Rudgwick Sanatorium, Sussex.... 70
Ruebury Sanatorium, Northallerton 68
St. Andrew's Hospital, Dollis Hill 70
St. Andrew's Hosp., Northampton 65
St. Luke's Hos. for Mental Diseases 64
Shaftesbury House, Formby-by-the-Sea..... 68
Springfield House Private Asylum, Bedford 65
Stocker, Craven-street 70
Stretton House, Church Stretton.. 65
The Grange, Rotherham 65
Vale of Clwyd Sanatorium 67
Warneford Asylum, Oxford..... 64
Wye House, Buxton..... 65
Yarrow Convalescent Home, Broadstairs 66

COMPANIONS:—
No. 618, L.O., Strand 75
No. 620, L.O., Strand 75

FINANCIAL, &c.:—
Equitable Reversionary Interest Society..... 61

HEALTH RESORTS, BATHS, &c.:—
Alexandra Therapeutic Institute.. 66
Davos 63
Divonne les Bains 69
Harrogate Hydropathic Establishment 63
Leysin, Switzerland..... 69
Peebles Hotel Hydropathic 63
Smedley's, Matlock 63
Val-Mont 63

HOTELS:—
Hotel Bristol, Mentone..... 63
Hotel Windsor 69
Knowle Hotel, Sidmouth 69
White Hart Hotel, Margate 63

HOUSE & ESTATE AGENTS:—
Brackstone & Co., Colwyn Bay 76
Griffin & Son, Ealing 76
Head & Co., Upper Baker-street .. 76
Houghton, Old Broad-street 76
Ley Clark, Wimpole-street 76
Pettit, Oxford-street 76
Snaith & Son, Darlington..... 76
CONSULTING-ROOMS:—
14, Weymouth-street 76

LIFE & FIRE ASSURANCES, &c.:—
Prudential..... 61

MASSAGE:—
Harley Institute School of Massage 61
London School of Massage 61
No. 610, L.O., Strand 61

PAGE

MEDICAL ACCOUNTANTS, &c.:—
Turner 75

MEDICAL AGENTS:—
Fieldhall, Limited..... 78
Manchester Clerical, &c., Assoc... 79
Medical Agency 79
Moore & Co. 74
Needes, Herbert 79
Needes, J. C. 79
Peacock & Hadley..... 79
Scholastic, Clerical, &c., Assoc. .. 77
Turner 78

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Medicine 60
West London Post-Graduate Coll.. 60

NURSING INSTITUTES:—
General Nursing Association..... 63
Hospital for Sick Children, Great Ormond-street 61
Leeds Trained Nurses' Institution 62
London Nurses' Association 63
London Temperance Male and Female Nurses Co-operation .. 62
Male Nurses Temperance Co-operation 62
Mental Nurses' Co-operation..... 62
National Hospital Male Nurses' Association 61
Nurses' Co-operation, Portland-place 63
St. John's House 61
St. Luke's Hospital, E.C. 62
Temperance Association of Male Nurses, Ltd..... 62
Temperance Male Nurses Co-operation 61
Temperance Male and Female Nurses Co-operation 62
The Retreat, York 62

OFFICIAL NOTICES:—
City of London Lying-in Hospital.. 60
Clapham Maternity Hospital, &c.. 60
London Hospital 61
London School of Tropical Med. .. 60
North-East London Post-Graduate College 60
Queen Charlotte's Lying-in Hosp.. 60
Royal Eye Hospital, Southwark .. 60
Royal Society of Medicine.. Cover i
West End Hospital for Diseases of Nervous System..... 60
Western Skin Hospital 61
York-road General Lying-in Hospital, Lambeth 60

PARTNERSHIPS & PRACTICES 75

RAILWAY & STEAMSHIP CO.'S:—
New Zealand Shipping Co..... 61

TUTORS & LECTURERS:—
Gemmell .... 61 | No. 449, L.O.. 73
Med. Corres. College .... 61 | Schnelle 9
Weymouth .. 63

For Index to Trade and Miscellaneous Advertisements see page 4.

An Introductory Lecture

ON

THE CAUSES AND SYMPTOMATOLOGY OF IMPAIRED RETINAL ACTIVITY.

Delivered at the Royal Eye Hospital, London, on Oct. 15th, 1913,

BY GEORGE A. BERRY, M.B. EDIN., LL.D., V.P.R.C.S. EDIN.,

HONORARY SURGEON OCULIST TO H.M. THE KING IN SCOTLAND; CONSULTING OPHTHALMIC SURGEON, ROYAL INFIRMARY, EDINBURGH, ETC.

GENTLEMEN,—The functions of the retina and its nerve continuations, including the centre for vision in the brain, are customarily and conveniently considered in relation to three subdivisions of the sense of sight. These are: (1) the light sense—the sense of light intensity; (2) the colour sense—the sense of the quality of any light impression; and (3) the form sense—or the sense by which we discriminate between any quantitative or qualitative differences in the contiguous impressions which are made within the area occupied by the image on the retina of any external object. A distinction has also to be drawn between the foveal or central, and the more rudimentary excentric, vision.

In order that we may be able to draw inferences which may be helpful both in diagnosis and prognosis it is important to have some notion of the normal interrelations of these three divisions of the sense of sight, and of the nature of deviations from the normal associations. This is often not sufficiently kept in view. Much information which it is possible to derive from subjective examination alone is comparatively seldom looked for. Except in the case of optical defects it is rare that any attention is given to why, and in what way, different abnormal conditions cause a loss of retinal activity. I propose in this lecture to discuss some physiological facts connected with vision, to draw some inferences from these facts, and to refer more particularly to subjective methods of examination. I shall also discuss the conditions of the whole visual apparatus upon which they are capable of throwing light. Although, in doing so, it will be necessary to refer to the more purely scientific aspects of the subject, I shall mainly lay stress on the practical applications of the tests, and the practical conclusions to which what may be called an extended, more complete, subjective examination leads. In doing so, although I may go over ground with which you are familiar, I hope to bring before you some points of view with which you are perhaps not so fully acquainted.

THE FORM SENSE.

To begin with the form sense: it is the estimate of this sense that we make in the ordinary test for visual acuteness. The measure of acuteness is the measure of the degree to which it is possible to discriminate as separate impressions contiguous excitations of the retina which differ in intensity or quality. For the ordinary tests, Snellen's types, the contrast between the letters and their background is, practically speaking, a maximum—black on white. When these types are recognised at a distance for which the edges of the white interspace between two black figures subtend an angle with the eye of not more than 1′ the acuteness of vision is taken as coming up to the normal standard. This, however, though representing practically normal acuteness, is not necessarily the greatest acuteness of which the eye tested is capable.

The usual test for visual acuteness is made in a good light, as the object of the test is to determine the acuteness in ordinary daylight. Every day observation shows us that the vision is less sharp in a bad light. The more feeble the illumination the greater is the diminution in acuteness. On the other hand, the acuteness is heightened if the intensity of the illumination is increased to beyond that of ordinary daylight, until a point is reached when it again diminishes as the intensity is still further increased. Approximately it is found that to increase of intensity in geometrical progression there corresponds increase in acuteness in arithmetical progression up to the point from which acuteness ceases to increase, and beyond which it decreases as the intensity is increased.

The test with Snellen's types not only implies that the letters are capable of being distinguished when their characteristic parts subtend an angle of 1′, but that they are distinguishable when the parts subtending that angle form part of a letter whose height and breadth subtend angles of 5′.

Though Snellen's types constitute the most convenient, most practical, means of determining the acuteness of direct vision, and notwithstanding the existence of many rival tests they are the most universally adopted, we do not by their use arrive at any mathematically accurate measurement of acuteness. It is well to remember that the various letters of the test are by no means equally distinguishable. A letter of Snellen's types can often be recognised at a distance for which simpler figures which subtend the same visual angle are not recognisable. The easiest letters to distinguish are A, L, and T. Of those apt to be mistaken for each other are V with Y, or U and O with C and G, and F with P. Thus in testing we may find, where the acuteness is not normal, that immediately below a line of test types in which all the letters are recognised, there come one or two in which some letters only, or one letter only, can be deciphered. Again, where we find the acuteness considerably greater than 6/6, this is not always, or even generally, the case for all the letters, but only for those whose shape as a whole exerts an influence on their legibility.

Anatomical and Physiological Considerations.

We may now consider what are the anatomical and physiological facts which justify the generally accepted inference that the form sense is dependent upon the stimulation by light of the layer of rods and cones of the retina. So far as anatomy goes the points that are suggestive are: the fact that these organs constitute the extreme end of the nerve chain, that they are arranged normally to the surface of the retina, that their ends have a mosaic-like arrangement, and, lastly, that their size is consistent with their supposed function. And considered from a physiological standpoint: as it is found that a number of closely contiguous yet discrete luminous points, whose optical images are sharply focused, can also be seen as separate points, it follows that the layer of the retina in which the light stimulus causes a nerve response must have a mosaic-like arrangement. Each element in this layer must consequently have no considerable size in a direction tangential to the surface, and it is hardly possible to imagine a superposed arrangement of stimulable elements. There must only be one sensitive element placed normally to the retina at each point, as there is only one distinguishable sensation caused from each point. The layer of rods and cones not only answers to these various requirements but is the only layer of the retina which does so.

A further deduction which has to be made is that, for the fovea at any rate, each single element of the stimulable layer must have a sufficiently isolated connexion with its nerve continuation by which its stimulation leads to a conduction to the visual centre. It is only thus, in fact, that two contiguous end-organs, which are subjected to different degrees of stimulation, can be supposed to elicit impressions that are separately distinguishable. It is only thus, therefore, that can be explained the fact that two equally bright external objects are capable of causing separate impressions when their retinal images are separated from each other by a space not greater than corresponds to the breadth of a single end-organ. The correspondence in size between the smallest distinguishable separation of retinal image points and that of the cross section of the retinal cones is very close. Both are approximately equal to from 1/250 mm. to 1/200 mm. Theoretically the former might be even a little less than the latter.

It is rather remarkable that the correspondence should be so close, because even the most perfectly focused retinal image does not anywhere nearly comply with what might at first sight be supposed to be the conditions which would permit of so great a possible visual acuteness. For it never is the case that light emitted or reflected from any external object leads to a stimulation of two end-organs only, which are separated by not more than one other end-organ. Owing to the necessarily imperfect focusing, which is owing principally to chromatic aberration, the intervening end-organ is

also always stimulated at the same time, though not to the same extent. The image of any external point of light is always diffuse and not absolutely sharp. Its diffusion extends, given a pupil of moderate size, over an area which is 80 to 100 times as great as that occupied by the transverse section of a cone. It is only because the intensities of the stimulation over this diffusion area diminish rapidly from centre to periphery, as well no doubt because of the mosaic-like arrangement of the sensitive layer, that the distinguishing power of the eye can reach the degree which it is actually found to do, and thus come to correspond as nearly as it does to its conceivable maximum. It is of importance to remember the existence of this diffusion of an image of a point as it explains many of the phenomena of vision.

Notwithstanding that the intensity of illumination has so great an effect on acuteness of sight, this is counteracted by an influence of great importance. Owing to the power of adaptation to light which exists in the percipient parts of the eye—the adaptation of the retina—there may be, within very wide limits of illumination, but little appreciable change in acuteness. But as adaptation takes place comparatively slowly any sudden change of illumination of sufficient amount causes either an increase or a diminution of acuteness according to the direction of the change.

Retinal adaptation is an important factor to take into consideration, as it does not always take place with the same rapidity or to the same extent in different individuals. It may happen that individuals with equally good, or normal, acuteness in full daylight have by no means equally sharp sight under a comparatively feeble illumination. There may, too, be little, if any, difference in the acuteness of two individuals caused by a sudden change, and yet be a marked difference between them when the change has been slow and has thus given time for a normal adaptation to take place. A defect in the range of possible adaptation may be either congenital or acquired. When the defect is marked it gives rise to what is called twilight-blindness or night-blindness, which may be met with in very varying degrees. In the lesser degrees it has not usually any pathological significance. It is common enough to meet with people, especially myopes, who throughout life see quite decidedly worse in the dark than others, but whose sight remains otherwise normal. The more marked degrees of night-blindness, however, are attributable to actual pathological changes which must be looked for in that part of the eye in which adaptation takes place. That this is mainly, if not entirely, in the hexagonal retinal cells is an inference which is forced upon one by facts of both physiology and pathology.

But, in addition to the influence of the absolute brightness of objects seen, it is obvious that differences in contrast—i.e., variations in the extent to which the different parts of objects differ in brightness—must also have an effect on the sharpness of sight. With the exception of print, where there is the full contrast of black on white, most objects are not presented to the eye with the same contrast in their details.

Factors determining Visibility.

The visibility, therefore, of any object depends upon four circumstances: (1) the visual angle under which it is seen; (2) the degree of its illumination; (3) the difference between its own brightness, and (4) its own colour, and that of its background. And it is found that a difference in brightness must attain a certain degree before it becomes appreciable. Bjerrum seems to have been the first to investigate the effect of degrees of light contrast on visual acuteness, and more particularly to show the importance of contrast from a practical clinical point of view.

A thorough subjective test in any case of defective vision entails an estimation of the existing acuteness of sight under different degrees both of illumination and of contrast.

THE LIGHT SENSE.

We may now consider the light sense a little more fully. By that sense, apart from its necessary relation to the sense of form, is understood the power which the eye has of distinguishing differences in light intensities. This, of course, includes the power of distinguishing light from darkness. It is customary, however, and also clinically useful, to differentiate between the acuteness of the sense of appreciating light from darkness—what is usually then spoken of as the *light minimum* sense—and the acuteness in distinguishing between light impressions of different intensities or the *light difference* sense.

From a scientific point of view the best method of measuring the acuteness of these two constituents of the light sense are for the former Förster's photometer and for the latter Masson's disc. For clinical purposes, however, it is more convenient not to attempt any accurate measurement of the light sense as dissociated from the sense of form.

The Mechanism of Retinal Stimulation by Light Vibrations.

We have already considered the causal connexion between the form sense and the stimulation of the retinal cones, but we have not yet discussed the mechanism of their stimulation by light vibrations. It is known that there is no direct action of light on the nerve elements of the retina of which the rods and cones are the terminals. In fact, it is not light vibrations alone which may cause luminous sensations. The light sensations caused by pressure on the eye—what are known as phosphenes—afford an indication that a retinal activity can be aroused mechanically, and the fact that phosphenes are light in the dark, and dark when the eye is exposed to light shows that pressure not only causes a stimulation but also diminishes the excitability of the retina for the normal stimulus of light vibrations.

Light vibrations produce their stimulation therefore indirectly. They set up in the first place some physico-chemical change in the contents of the hexagonal pigment cells. This change then excites the functional activity of the nerve fibres through their terminals the rods and cones. One result of the indirect nature of the stimulation is that a measurable amount of time elapses before an excitation causes its full impression, and also before, on the cessation of the action of the physical excitant, the impression altogether ceases and disappears. It is for this reason that separate stimulations which succeed each other with sufficient rapidity give rise to continuous visual impressions.

The nature and strength of the impression caused by light rays passing to the eye from an external object are therefore influenced by the following conditions: the size of the pupil, the supply of chemical material in the retinal pigment cells, the stimulability of the nerve elements of the retina, the conductivity of the optic nerve fibres, and the receptivity of the cells in the visual centre. The hexagonal pigment cells and the nerve end-organs in the retina are therefore mutually suppporting and associated in the process of converting the physical cause into the physiological sensation of light. Without the pigment cells the nerve endings would not respond to ether vibrations, and without the nerve elements the physico-chemical changes which these vibrations set up in the substance of the cells could not lead to conscious light impressions.

Now we find a distribution of the pigment cells over the whole extent of the functionally active portion of the retina. It is true that some little difference exists in the size of the cells at different parts. They are smaller at the fovea, where they cover nine or ten cones, than at the periphery, where they embrace 20 or more end-organs. But the first effect of a light stimulus—i.e., the chemico-physical change—is probably not different whichever part, central or peripheral, receives the stimulus. A sufficiently large white object appears, for instance, equally bright over the whole field of vision. On the other hand, there is not an equal distribution of rods and cones all over the retina. As a consequence of this the effect of stimulation of the pigment cells is not everywhere the same, so far as the impression goes to which the stimulation gives rise. The excentric form sense is different and much less acute than the central.

Affections of the Light Sense.

This double nature, so to speak, of the retina makes it possible to conceive of visual defects arising from pathological or other changes which involve either one or both of the two elements. That is to say, some affection might impair or destroy the activity of the retinal cells alone, or of the nerve elements alone, or of both at the same time. An affection of the choroid, for instance, might either directly, or through the rich network of blood-vessels from which the pigment cells derive their nutriment, impair the function of these cells without necessarily invading the nerve elements. On the other hand, a process of atrophy of the optic nerve would not involve the pigment cells, and a diffuse retinitis might likely enough include both nerve elements and hexagonal cells in its destructive changes.

Now, what must be the inference as to the manner in which changes in either pigment cells or nerve end-organs might be supposed to cause a departure from the normal in functional activity? With a normal state of the nerve elements the power of discriminating differences in degree of stimulation would remain normal. That is, given the stimulation, the light difference sense would not be affected so far as it depended simply upon the activity of the nerve elements. On the other hand, changes confined to the pigment cells, and to the sources from which their nutriment is drawn, might conceivably lower their response to light vibrations. Consequently the acuteness of the light minimum sense would thus be lowered. If this, again, were to take the form of a greater amplitude of ether vibrations being required to start any chemico-physical response in the substance of the pigment cells, without there being any reduction, when once started, in the relative amount of response, as the strength of the stimulus was increased, there must as a consequence be a light sense defect limited to the light minimum and not involving the light difference sense, which, as we have seen, depends upon the discriminating power of the retinal nerve-end organs. Again, a defect of excitability or conductivity in the latter would conceivably mainly diminish the acuteness of the light difference sense and cause comparatively little lowering of the light minimum.

A priori, therefore, we might have two different affections of the light sense, represented respectively by a bluntness in the light minimum sense without any loss in the sense of light difference in a good light and a diminution of the light difference sense in a good light with little or no increase in the stimulus required to evoke a minimum sensation of light. When we come to consider the manner in which the form sense must be influenced by these conditions, we shall find that they actually do occur, and are characteristic of definite types of disease.

Experiment has shown that physiologically the appreciation of light differences is influenced by both the size of the visual angle and the absolute illumination under which objects are seen. The larger the visual angle the more delicate is the sense of difference in brightness. Up to a certain point, too, the same sense becomes more and more delicate as the intensity of illumination is increased. Roughly speaking, the maximum of acuteness is reached for an intensity of illumination which falls short of causing any discomfort—for what might be called a good light for reading by. Now, it is evident that the criterion that the light sense is normal in any case is that there should be both a normal light minimum and a normal light difference discrimination. One alone is not sufficient. For a visual acuteness test made in the ordinary way there is, for normal eyes, no marked individual difference in the effect produced by altering the intensity of illumination under which a test is made. No doubt, therefore, where we find that the visual acuteness sinks appreciably more rapidly than normally with diminishing intensity of illumination there must be a defect in the light sense. But this symptom of such a defect may have to be looked for. Of two individuals, e.g., whose acuteness is the same, or normal, through perhaps a considerable range, the light sense may nevertheless be abnormal in one. For the acuteness may be found to drop suddenly in the one when a greater reduction in brightness is made. A congenital light sense defect, existing along with full acuteness of vision in ordinary light, is a defect in the light minimum sense alone. A light difference defect is never found along with a completely normal form sense.

In moderate degrees of congenital amblyopia, such as are not uncommon in hypermetropes, the light and colour senses, when tested with objects which do not subtend too small a visual angle, are normal. As we have already seen, the light difference sense depends very greatly, within limits, on the angle under which an object is seen. And the same applies to the colour sense. For minimal visual angles, 1′ to 2′, for instance, even the normal eye is not capable of detecting anything like so small differences of brightness as for such angles, 1° to 2° or more, under which the most frequently applied tests are made. This fact, which has been long known and specially studied by Aubert, is of great importance in explaining the nature of defective sight.

THE COLOUR SENSE.

With regard to the colour sense, it would be impossible within the limits of a single lecture to include much. The subject is a difficult one, moreover, and it will only be necessary to refer to so much as will serve to explain the importance of colour tests for diagnosis. By the colour sense is understood the power of distinguishing qualitatively light of different wave lengths and quantitatively the relative intensities of light of the same vibratory frequency. A distinction must be made between the colour sense and colour perception. Two individuals may have an equally perfect sense for colour; it is easy enough to demonstrate this. On the other hand, it is impossible to assert, however probable it may seem, that their perceptions of colour impressions are identical. Our tests then have only and can only have to do with the colour sense.

There is no absolutely constant connexion found to exist between the physical stimulus—i.e., the vibratory frequency of light rays—and the colour impressions which they produce. The same rays may, according to circumstances, cause quite different colour sensations, and the same colour sensations may result from the action of quite different rays. Some of the conditions that influence the sense of colour are: the intensity of illumination of the coloured light or object, the visual angle under which it is seen, the nature of the background on which it is seen, and the duration of the physical stimulus which produces the impression. A very short subjection to the action of coloured objects gives rise to different colour impressions than those which arise from a more prolonged action. If seen only momentarily, the whole spectrum appears uncoloured and shortened at the red end. A less momentary, but still short, exposure gives rise to only red and blue impressions. The rays which soonest cause their normal impression are the red, the blue take longer, and the green still longer. There is thus exhibited in regard to colour sensations the same phenomenon to which I have already referred—viz., the lapse of a measurable amount of time before the physical stimulus can give rise to its full effect. A positive after-image is again the result of some time also elapsing, on the conclusion of the stimulus, before its effect altogether disappears.

The effect of illumination on colour is familiar in the gradual loss in the impressions of colours in nature as daylight fades into darkness. The effect of the size of the coloured object on the impression produced is easily demonstrated. It is different for different colours. Whereas a small green object completely loses its colour before disappearing, it is not so easy to observe the same effect in the case of a small red object.

Colour impressions got from the spectrum are more vivid—i.e., their hue is more saturated—than those got from coloured objects. But even the spectral colours are not the most saturated which it is possible to see. More vivid impressions still are got when the images of spectral colours fall on parts of the retina which have immediately before been stimulated by rays complementary to those in the new image. Fatigue therefore for one set of rays causes a heightened impression for rays which are complementary to them. This fatigue for colours is in some way connected with the physico-chemical changes which take place in the retinal pigment cells. Possibly it is only partly due to the using up of the chemical material and related more intimately, as in muscular fatigue, to the accumulation of waste products. If, for instance, we look for a few seconds at a large sheet of brightly and uniformly coloured paper, on a part of which is laid a small piece of dead black paper, it is found that on withdrawing the black paper the part of the coloured surface, which then comes to occupy the place of the image, is projected as a much more vivid colour than the rest of the surface by which the surrounding retina has been continuously stimulated. And the same influence of fatigue, though not so uncomplicated, is seen in changing the position of the retinal images of external objects by looking at them with the head in some other position. The existence of this kind of fatigue should be remembered, as it may become more marked in disease.

CENTRAL VISUAL DEFECTS FROM PATHOLOGICAL CHANGES.

We are now in a position to take up the consideration of how defects of vision which occur from pathological changes must be explained. We are not concerned, of course, with defects due to changes in the dioptric media or with such as cause retinal metamorphopsia. When the images formed on the retina are accurate, the distinguishing power of the eye is physiologically lowered—i.e., the strength of the stimulus is diminished—either by reducing the absolute

brightness or by diminishing the contrast between it and its background of an object seen under a constant visual angle. Consequently, pathological changes which reduce the strength of the impressions which objective stimuli make on the nerve mechanism of the eye must explain also the lowered visual acuteness which accompanies them. Diminished excitability or diminished conductivity must have this effect.

The detection more especially of an interference with nerve conductivity is an important factor in diagnosis. It is only with tests capable of indicating with delicacy the limits of functional activity that it is possible to detect the early stages of many affections.

We start, then, with the conception that anything which reduces the stimulability of the single cone (and we are for the present only considering central or foveal vision) will also reduce the acuteness of vision. We find, in fact, that a small object, white on a black or black on a white background, say a disc of 1 mm. diameter at a distance of 10 or 11 feet, an object which therefore subtends an angle of little more than 1′ (the angle adopted for Snellen's types), if seen at all disappears sooner altogether from view for a diseased, as compared with a normal eye, when its brightness is gradually reduced. Yet there may be no apparent difference in the brightness of the more extensive background in the two cases. It is only therefore when the visual angle is sufficiently small that the difference becomes apparent. If an amblyopia is not very great, the visual acuteness not lower than say 1/6 or 1/7 of the normal standard, even a white object 10 mm. in diameter at a distance of a foot does not appear to differ appreciably in brightness from the impression which it causes on the normal eye. The conditions are in this respect similar to what obtains for normal excentric vision. An object of this size is seen equally bright over the whole field, although the excentric acuteness of vision is much less than the central, and increasingly less the more excentric the image comes to lie. In a case of toxic amblyopia, too, a white object of the same size and at the same distance may not appear any less bright when its image falls within the central scotoma than it does elsewhere over the field of vision, while a much smaller white object, though visible excentrically to the scotoma, may not be seen at all within the area of the scotoma.

It must be admitted that this difference in apparent brightness, according as the retinal image is a very small one or one of sufficient extent, is not quite easy to explain. It is difficult to see why, on the assumption of diminished excitability or stimulability of each individual retinal element, the larger surface should produce a different effect from the smaller. The difference is not confined to quite minimal objects when compared with large ones. It is seen also for objects subtending angles of 5′–6′ or more, and cannot therefore be ascribable wholly to the effects of aberration. It seems reasonable to suppose that the difference in the impressions produced is due to a summation of the stimuli. When a large area of the retina is embraced the limit of stimulation capable of evoking an impression may be different from that for the stimulation of each individual cone. This seems to be consistent with the observed facts in regard to excentric vision. It has also been conjectured that pathological changes causing defective visual acuteness may not lower the excitability of the end organs, but cause a loss in the isolation of the conducting fibres with which each is associated, and consequently an irradiation of the stimulus. If this were really the case the summation of irradiations over a comparatively large image would account for the difference between its apparent brightness and that of an equally bright small image. It seems impossible to assert positively that, to some extent at least, this loss of isolation may not take place. Indeed, it is not unlikely that it does, but the matter is too speculative to discuss at length in this lecture. One difficulty, however, in accepting the loss of isolation explanation is that were it the main cause of visual defects, one would expect to find that a very small object, if sufficiently bright, would appear larger in cases of optic nerve disease than to the normal-sighted eye, and this, if it ever is the case, is certainly not generally so.

Determination of the Light Sense.

But whatever be the true explanation, the practical conclusion to which one has to come is that a determination of the visual acuteness in acquired defects of vision is tantamount to a determination of whether the light difference sense for a minimal visual angle is normal or not. These two hang together if the examination is made in ordinary daylight. This, then, is the justification for adopting the clinical methods of determining the condition of the light sense in preference to the quantitatively more accurate scientific methods. By Bjerrum's method the examination is made with the same ease as in the ordinary test for visual acuteness. The other methods take up more time.

For ordinary clinical purposes all that is required is to get a trustworthy indication of a diminution of the light sense—whether of the light minimum or light difference. A definite measure of the particular defect, though interesting, is not necessary for diagnostic purposes. Therefore in taking the light minimum sense we note the manner in which visual acuteness as tested with Snellen's types falls off with diminished illumination, and in testing the light difference sense the manner in which acuteness sinks for test types graduated like Snellen's, but in which the contrast is not black on white but grey on grey. Tests made in these ways show that in some forms of defective vision from disease the acuteness sinks very much more as the illumination is lowered than it does in other cases where the defect in vision is nevertheless the same in degree when tested in ordinary daylight. They show also that in other types of disease the acuteness instead of diminishing with abnormal rapidity on reduction of the illumination is retained, or it may be only very slightly lessened, so that the degree of the defect is relatively less with a feeble illumination than for an examination made in full daylight as compared with normal conditions of sight. There may further be shown by these tests that a marked difference between two otherwise equal degrees of amblyopia may exist in the visibility of Bjerrum's grey on grey types. One case may show a very marked reduction in the power of distinguishing the types, and therefore a loss of acuteness for light differences, while another may exhibit no abnormality in this respect.

A relatively bad visual acuteness when the illumination is lowered characterises the state of the light sense in all choroido-retinal affections. In some cases this symptom is more marked than in others, when it is not uncommon to find that there may be a spontaneous complaint of night blindness. The condition is, in fact, a light minimum sense defect; more light is required to elicit the functional activity of the retina than is required normally. Pathologically, it is a retinal pigment affection. A relatively great defect in the light difference sense, shown by abnormally diminished acuteness for the grey on grey types, is characteristic on the other hand of all the conditions where the principal pathological changes are located in the optic nerve.

We have, therefore, when testing the central vision alone, a ready means in the use of Bjerrum's grey on grey types of detecting not only cases in which there is a light difference defect for objects subtending a large, but also for such as subtend a small, visual angle. And in many cases a defect only exists, in point of fact, for vision under a small angle. The same is the case with regard to the colour sense. It may be perfectly normal, and there may consequently be no difficulty in matching or naming colours when the coloured surface presented to view is sufficiently extensive, and yet be quite evidently abnormal when very small coloured objects are used as a test.

This is the reason why some people who cannot recognise at all, or at least with uncertainty, the colour signals used on railways or at sea are yet able to pass the Holmgren and similar tests without difficulty. It is not the defect of the test as a test for colour blindness, nor an indication of the incorrectness of any particular theory of colour vision, that has to be blamed in these cases. It is simply that such individuals are really only defective in their colour sense for minimal visual angles just as others are only defective in their light difference sense for the same minimal angles. The practical indication which this affords is that those who have to recognise signals must be tested for small visual angles—tested, in fact, under conditions which are comparable with those under which they are actually placed in regard to signal lights.

EXCENTRIC VISUAL ACUTENESS.

It is then, because of the perfection of the central form sense, that one does not require, for purposes of diagnosis, to have recourse to any other test than the recognition of Snellen's types, either black on white or grey on grey when

the test is made in ordinary daylight, or to test the acuteness for these types under a feebler illumination. In this way we include the necessary tests under a minimal visual angle, and thus ascertain the state of functional activity of individual retinal elements. When, however, we come to tests for excentric visual acuteness, we have to adopt other measures.

The differences between central and excentric vision are differences in degree only. Consequently, the inferences which may be drawn as to the causes of defects in excentric vision are similar to those which have already been discussed. We are not in the habit of paying any close attention to the details of excentric impressions. Therefore the same tests as those for visual acuteness of foveal images are not practically applicable.

Besides being of a more rudimentary nature all over, the sense of form diminishes in acuteness with the degree of excentricity of the retinal image. This diminution takes place gradually. There are no noticeably sudden differences. Anatomically, the most apparent difference between the fovea and other parts of the retina is the gradual diminution in the number of cones which are met with in the latter for more and more excentric portions, the place of the cones being taken up by rods instead. This has given rise to the assumption that only the cones and not the rods have to do with vision. It is difficult, however, to reconcile this assumption with certain known physiological facts. A very small object, if sufficiently bright, is seen continuously as its image is caused to fall more and more excentrically on the retina. If its image only produced a visual impression when it fell on a cone, or when some part of its diffusion circle caused the stimulation of a cone, it would surely disappear and reappear, or at least undergo appreciable changes in brightness, as it passed from the centre to the periphery. But this is not found to take place. Moreover, the sense of movement of an object in the field of vision is too acute to be accounted for by cone images alone. For these and other reasons it is difficult to avoid the conclusion that the stimulation of the rods also gives rise to visual impressions, whatever other function they may subserve. There must be other reasons why the excentric form sense is so much less acute than the central. There is good reason for believing, e.g., that the peripheral cones have not each, like those of the fovea, an isolated connexion with their nerve continuations, but share this connexion with the rods which surround them. It is also very probable that each element *per se* is not so excitable as a foveal cone.

Excellent and necessary as the ordinary perimetric test with a white or coloured object, one centimetre or half inch square, is in many cases, it has to be kept in mind that it is a very rough one when compared with the ordinary test for central visual acuteness. It comes, indeed, very far from being a test of the functional activity of individual end-organs such as we approximate to, at all events, in the central vision tests. The image of an object only half inch square at a distance of one foot from the eye, the distance of the perimeter arc, must cover more than 20,000 rod and cone ends. To make a practicable test under sufficiently small visual angles the object must be smaller and be placed at a greater distance from the eye. The distance usually chosen, that at which the screen in Bjerrum's screen test is placed, is 2 metres.

It is obvious that the projection of any part of the fundus on a surface 2 metres distant must be something like seven times greater in diameter than it is on the arc of the perimeter. Thus the blind spot projected to this distance covers an area of about 7 inches in diameter instead of only about 1 inch for the perimeter.

Now, it is found that the normal extent of the field of vision varies with the size of the test object used until at any rate that object is one which is seen under a visual angle of about 1/2°. The smaller the visual angle the smaller also is the field in all directions. Bjerrum found that in general the most practically useful size of object with which to make a test at 2 metres is a disc of 3 mm. in diameter. This corresponds to a visual angle of 5′. It is sometimes, however, desirable to make use of still smaller objects. This is better than removing the screen further from the eye, though both methods may occasionally be resorted to as, e.g., in exploring a central scotoma.

For a 3 mm. disc at 2 metres, what according to Bjerrum's notation is usually called a 3/2000 test, the extent of the normal field is roughly 35° outwards, 28° inwards, 30° downwards, and 25° upwards. In this respect, however, individual differences may be found, just as is the case with central visual acuteness. The differences met with may also depend to some extent on individual power of attention. Such a test cannot, therefore, lay claim to anything like mathematical accuracy. This, which applies also more or less to all subjective tests, seems often to be lost sight of. It is therefore important to avoid attaching undue weight to slight apparent concentric limitations. Owing to diffusion of the image optical defects cause a narrowing of the boundaries, though only to a slight extent. The intensity of illumination of the test object and the size of the pupil have also an influence in this respect. On the other hand, sectoral or other peripheral restrictions, or scotomata, if met with under any conditions of refraction or illumination, are evidences of pathological changes in functional activity. The detection of the boundaries for small white objects is, as a rule, given average attention on the part of the patient, a very easy matter. It is less difficult to obtain a correct estimation of these boundaries, when all that is required is to note when the test object ceases to be visible at all, than it is to fix the boundaries for colour, as it is not easy, even for people with some power of observation, to say when an excentric colour impression changes or disappears altogether.

By determining, then, the limits of the field of vision for small objects of gradually increasing size we obtain what is tantamount to a measure of the visual acuteness over different parts of the retina. For instance, one physiological condition, whose existence cannot otherwise be demonstrated, is the presence of a narrow zone of the retina surrounding the intra-ocular end of the optic nerve for which the vision is considerably less acute than it is immediately beyond, or indeed anywhere excentrically, except near the extreme periphery. This zone, whose projection measures fully an inch in breadth with the 3/2000 test, therefore correspondingly increases the area of the scotoma marking the blind spot as compared with the size for which that physiological scotoma is absolute.

One thing that is most noticeable and instructive where the normal conditions are departed from is that the shape of the field of vision as marked out by, e.g., a 3/2000 test, is by no means always, or even generally, a sort of contracted miniature of that which may be found by the ordinary perimetric examination. It may, in fact, have a completely different form. The reason of this is obvious. The one is a test to detect the loss in acuteness of vision at any part of the retina, the other is a test for the detection of the area of actual blindness.

Value of the Screen Test in Various Conditions.

For the detection of a relative scotoma, therefore, the small object test may be quite essential. Even an absolute scotoma, if small, may escape detection if the perimeter test alone is relied upon. To get the image of the perimeter test object to cover a small absolute scotoma is not easy even when it is carefully looked for, so that the patient is conscious of the complete disappearance of the white object. The scotoma has to be projected to a greater distance before it can be mapped out with certainty.

But with the small visual angle tests one can do more than merely map out the area of a scotoma. It is also possible in many cases, if time be given for the examination, to estimate the degree of the defect in different parts of a scotoma which is wholly or partially only relative. If, after beginning with a very small test object, and noting the size of the area over which it is invisible, successively larger and larger test objects are used, the shape of the scotoma may be found to alter, or the area for which a continuously defective acuteness was at first found may split up into two or more portions for which the acuteness is less than that of the intervening portions in which the larger test objects are recognised.

There is another class of cases, which are no doubt less frequently met with, in which the same test may give valuable information—viz., cases in which there is pressure on the optic nerve, the tract or the chiasma. Here the test may prove a delicate one from the point of view of prognosis. It comes, in fact, to be a gauge of the degree to which conductivity in the nerve fibres is affected by the pressure. In some cases, if closely followed, a variation in the excentric acuteness from time to time will suggest an intermittency

of pressure such as might be produced by varying degrees of vascular engorgement in a tumour causing the pressure. There is much work to be done yet in this connexion; work which involves time and patience. Quite recently some interesting points in connexion with acromegaly have been investigated by Traquair with the screen test. His results, which afford, with a delicacy not otherwise obtainable, an indication of constant or varying pressure on the chiasma, are of importance in connexion with the question of operative interference in such cases.

In cases also of choroiditis, of progressive myopia of a severe type, of retinitis pigmentosa, of neuritis, of optic atrophy, and of glaucoma, the screen test as a means of detecting localised diminutions of excentric visual acuteness gives information of diagnostic and prognostic value which would necessarily often escape observation by the ordinary perimeter test alone. In choroiditis the extent of a central defect or of a circummacular, continuous or interrupted, ring-shaped scotoma, can thus be demonstrated. In progressive myopia the earliest symptoms of macular and circumpapillary degeneration are revealed. In retinitis pigmentosa the 3/2000 test always brings to light the existence of marked concentric limitation—i.e., a drop in the acuteness of excentric vision long before an absolute limitation can be made out by a perimetric test with its test object subtending a much larger visual angle. In neuritis the enlargement of the boundaries of the blind spot and, as also in atrophy, the many different ways in which the excentric vision is reduced and lost can be mapped out.

In glaucoma we possess in the 3/2000 test a means of diagnosis before even any other appreciable signs or symptoms of the disease exist. In the glaucoma field, which may assume an almost infinite variety of forms, there can nearly always be recognised one appearance which is peculiar to glaucoma, and which was first discovered by Bjerrum as the result of the application of his screen test. This characteristic symptom consists in the area of relative loss of acuteness—i.e., the area over which the test object is invisible—being always traceable up to the blind spot, while at the same time some other portion of the blind spot is found forming part of the boundary of the field for which the test object is still visible. This peculiarity can only exceptionally be found by the perimeter test—only, in fact, when the vision is altogether lost in the corresponding area. The screen test is also useful for the detection and elucidation of an incomplete hemianopia as well as for discriminating between different forms of a central amblyopia.

The Condition of the Excentric Colour Sense.

The perimeter and screen tests with white objects, by which concentric or otherwise circumscribed, blind, or defective areas can be detected in the field of vision, and which thus afford evidence of pathological changes in the functional activity of the excentric portions of the retina, are the most valuable tests which can be applied. It is also, no doubt, of interest to test the condition of the excentric colour sense. But from a diagnostic and prognostic point of view the information thus got is of less value. Abnormal restrictions of the colour field, it is true, are evidences of diminished visual acuteness. They are early symptoms of the lowering of conductivity. Colour tests are also useful and of easy application for detecting the presence of a relative central scotoma in cases, for instance, of toxic amblyopia. But there is little use in any affection of mapping out the boundaries of the field for a number of differently coloured objects—red, green, blue, and yellow—as is so often done. Even in the case of altogether normal eyes such a test leads to the discovery of not inconsiderable individual differences. I have already remarked, too, that the exact limits of recognition excentrically of the colour apart from the coloured object is not quite an easy matter. Very great care is, therefore, required to satisfy oneself of the accuracy of statements made by patients. Consequently, we must exercise care in drawing inferences from any apparent differences in the results of the same tests made at different times in the course of any affection. When sufficient care is taken, and there is a sufficiently marked difference in the response to the test after an interval of time, no doubt the indication thus given of a change in functional activity may be relied upon.

Apart from this practical objection, however, I believe that, as generally applied, the tests for excentric colour vision are unnecessarily complicated, owing to their being made on a wrong principle. The physiological fact is lost sight of that the limits of the field of vision for any particular colour are always the same as those for the colour which is complementary to it. If it were not so, and it is not very difficult to prove that it is, a white object would not be seen uncoloured over the whole of the field of vision. Consequently, when one sees stated or charted that the green field in any case is narrower than the red or *vice versâ*, one knows that the colours used are not complementary, or at all events, if by chance they should be complementary, have not in addition the same neutral or white value. Only one colour should therefore, as a rule, be used for clinical purposes, preferably a red or green. The exact colour chosen, too, should be one which retains its hue in every part of the field for which it is visible. Another colour, blue or yellow, whose particular hue, as seen excentrically, is in the same way invariable, may occasionally be required when the red or green object, either as the result of disease or of congenital colour confusion (so-called colour blindness) is altogether unrecognisable excentrically.

CONCLUSIONS.

What I have aimed at in this lecture is to draw inferences to explain defective vision from disease by comparison with certain known facts in the physiology of vision. Further, having done so, I have attempted to justify the selection which I advocate of the different methods for the subjective examination of central and excentric vision. I have also pointed out some of the conclusions to which the results which may be got by such examinations lead.

We have seen that, physiologically, when the intensity of a light stimulus, acting only on a few end organs of the retina, is diminished in any way—that is, when either the brightness of the test object or the contrast between it and its background is diminished—then the visual acuteness, the power of recognising detail, is lowered. And for diminished intensity of stimulus in the case of the normal eye we have assumed diminished excitability, conductivity, or receptivity in that of the diseased eye. *A priori* the result must be the same in both cases.

That the assumption is justifiable is shown by the fact that in every case of acquired visual defect, with obvious exceptions, the light sense for small visual angles is diminished. As this is not necessarily the case for larger visual angles, it follows that a summation of feebler individual impressions must have the effect of causing a stronger total impression. We have found that both the light and colour senses are greatly dependent upon the size of the angle under which any object is seen. The eye is unable to detect anything like as small differences in the intensities of contiguous retinal stimuli under a small, as it does under a greater, visual angle. And this circumstance, when taken along with the physiological imperfection of the retinal images of external points, is the reason why visual acuteness is greater in what we call a good light than it is in a sufficiently bad light. Thus is explained the drop in acuteness which takes place, physiologically, in the dark—a drop which is, however, greatly modified by retinal adaptation. Thus also is explained the drop which takes place, pathologically, when the excitability or conductivity of the nervous mechanism is lowered. And it is obvious that, given normal optical conditions of the eye, a diminution in visual acuteness must depend upon some change in the retina, or its direct connexions.

I have left out of consideration those visual defects which come from optical errors alone. The explanation of these is simpler. The diffusion circles of the images of objective points are of quite another nature than those which are due to aberration. It is interesting, however, to note in connexion with the subject of the lecture that, as a rule, the visual acuteness of an ametrope is relatively better when compared with that of an emmetrope when the light is insufficient to permit of full vision in the case of the latter. This is due, of course, to the absence, generally speaking, in the ametrope, *quâ* his ametropia, of any light sense defect.

Finally, as regards the methods of examination, we have seen that for foveal vision it is easier and, for clinical purposes, sufficient to test the acuteness for Snellen's types under ordinary and reduced illumination and contrast, than to determine the limits of invisibility with the photometer and Masson's disc. We have seen further that similar tests

are not suitable for the examination of excentric vision, and that an estimate of visual acuteness at other parts of the retina than the fovea must be made with objects which subtend a very small visual angle.

SYMMETRICAL NECROSIS OF THE CORTEX OF THE KIDNEYS

ASSOCIATED WITH SUPPRESSION OF URINE IN WOMEN SHORTLY AFTER DELIVERY.

BY H. D. ROLLESTON, M.D. CANTAB., F.R.C.P. LOND.,
SENIOR PHYSICIAN, ST. GEORGE'S HOSPITAL; PHYSICIAN, VICTORIA HOSPITAL FOR CHILDREN.

SYMMETRICAL necrosis of the cortex of the kidneys is rare and is almost only seen in women directly after childbirth, in whom ten cases have been reported (Bradford and Lawrence,[1] Griffith and Herringham,[2] Lloyd,[10] Klotz,[3] Jardine and Teacher[6] (2 cases), Torrens,[12] and Jardine and Kennedy[7] (3 cases)). The one recorded below brings the total up to 11. (See Table I.)

Griffith and Herringham's patient vomited frequently and had headache during the earlier days of the illness, but these may have been due to chronic nephritis; in my case drowsiness and vomiting occurred in the early stages; and convulsions are recorded in six cases. But in 2 out of these 6 cases the convulsions occurred only before the uterus was emptied (Jardine and Teacher, Case 2, Jardine and Kennedy, Case 3), and therefore cannot be so distinctly correlated with the anuria as in the other 4 cases. In 2 cases (Lloyd, Klotz) convulsions occurred after delivery; in 1 case (Jardine and Kennedy, Case 2) just before death, and in 1 case (Jardine and Teacher, Case 1) both before and after delivery. It is interesting to inquire if the occurrence of convulsions can be correlated with the presence of old-standing renal disease, and the absence of convulsions with a previously healthy state of the kidneys. (Table II.) Of the 5 cases in which convulsions did not occur the kidneys were previously healthy in 3, showed endarteritis without renal fibrosis in 1 (Bradford and Lawrence), and chronic nephritis in 1 (Griffith and Herringham). Of the 6 causes in which convulsions occurred the kidneys were previously healthy in 2; in 1 case—a woman of 22, in whom 12 fits occurred before delivery—there was very slight endarteritis only, and

TABLE I.—*Giving Particulars of the 11 Reported Cases.*

Authors.	Age of patient.	Condition of child.	Duration of anuria.	Uræmic symptoms.	Condition of kidneys, &c.
Thrombosis of Interlobular Arteries.					
Bradford and Lawrence.	36 7-gravida.	Dead child.	7 days.	Absent.	Endarteritis of interlobular arteries. Veins healthy. No fibrosis of kidneys.
Griffith and Herringham.	35 multigravida.	,,	6 days.	Almost absent.	Chronic nephritis. Retino-papillitis.
Lloyd.	39 multigravida.	Stillborn.	11 oz. in 11 days.	Convulsions after delivery.	Chronic interstitial nephritis.
Jardine and Teacher, Case 2.	22	,,	About 9 oz. in last 7 days.	Convulsions before and coma after delivery.	Very slight endarteritis only.
Klotz.	25 1-gravida.	Cæsarean section.	Not complete.	Two convulsions 7 days after Cæsarean section; occasional dyspnœa.	Some old change.
Jardine and Kennedy, Case 3.	23 2-gravida.	4-months pregnancy.	1½ days.	Several fits before uterus was emptied. Vomiting; semi-coma; and hiccough before death.	No old change. Scanty thrombosis in arterioles and capillaries.
Thrombosis of both Interlobular Arteries and Veins.					
Jardine and Kennedy, Case 1.	34 9-gravida.	Dead fœtus, 7-month.	4½ days.	Occasional dyspnœa; no coma; no fits.	No old change.
Jardine and Kennedy, Case 2.	36 2-gravida.	Live twins at eighth month.	2½ days.	Persistent vomiting; fit before death only; semi-coma 2½ hours.	,,
Jardine and Teacher, Case 1.	36 7-gravida.	Dead fœtus.	5½ days.	Fits before and after delivery.	Slight subacute interstitial nephritis and arterio-sclerosis.
Rolleston.	48 14-gravida.	Macerated fœtus, 14 days overdue.	8 days.	Dyspnœa; drowsiness and vomiting in early stages; twitched before death.	No old change. Thrombosis of ovarian and renal veins.
Thrombosis of Interlobular Veins.					
Torrens.	29 multigravida.	Abortion at fourth month.	8 days.	Absent.	No old change. Thrombosis of renal veins.

The ages of these 11 patients varied between 22 and 48 years. Nine were multigravidæ, one was a primipara, and in one case there was not any statement. In one case only was there a live birth (Jardine and Kennedy, Case 2) and in that instance there were live twins. The exception to the statement that symmetrical necrosis of the renal cortex is a puerperal manifestation is that in very rare instances embolic infarction may be so extensive as to produce this anatomical lesion. Juhel-Rénoy[5] described symmetrical necrosis of the renal cortex in a girl, aged 16 years, after scarlet fever, due to microscopic emboli in the interlobular arteries.

The *clinical features* are remarkable in resembling in the main those of calculous obstruction of both ureters rather than those usually regarded as characteristic of non-obstructive anuria. Although uræmic manifestations were absent in some of the reported cases and when present were usually comparatively slight, analysis of the 11 collected cases does not justify the statement sometimes made that uræmia is constantly and entirely absent. Dyspnœa occurred in 3 cases (in Jardine and Kennedy's first case, in Klotz's case, and in my case); Jardine and Kennedy's second patient vomited and for 24 hours before death was semicomatose; their third patient vomited and had hiccough;

TABLE II.—*The Pre-existing Renal Condition in Relation to the Occurrence of Convulsions.*

Cases without Convulsions.

Authors.	Condition of kidneys.
Bradford and Lawrence	Endarteritis.
Griffith and Herringham	Chronic nephritis.
Jardine and Kennedy (Case 1)	No old change.
Torrens	No old change.
Rolleston...	No old change.

Cases with Convulsions.

Authors.	When convulsions occurred.	Condition of kidneys.
Lloyd.	After delivery.	Chronic interstitial nephritis.
Jardine and Teacher.	Case 1.—Eight fits before and one fit after delivery.	Slight subacute interstitial nephritis.
	Case 2.—Woman, aged 22; 12 fits before delivery.	Very slight endarteritis.
Klotz.	Two fits after Cæsarean section.	Some old change.
Jardine and Kennedy.	Case 2.—Convulsions before death only.	No old change.
	Case 3.—Several fits before the uterus was emptied.	,, ,,

in the remaining 3 cases there was old change. There is, therefore, some, but not overwhelming, evidence in favour of the view that pre-existing renal change favours the occurrence of convulsions.

Although anuria was not absolutely complete in Lloyd's case (11 oz. in 11 days) and in Jardine and Teacher's second case (9 oz. in 7 days), it is a striking feature in nearly all these cases. In Bradford and Lawrence's case anuria lasted 7 days, in Griffith and Herringham's 6 (only 10 oz. being passed in the last 10 days), in Jardine and Teacher's first case 5½, in Jardine and Kennedy's first case 4½, second case 2½, third case 1½, in Torrens's case 8, and in my case 8 days. Klotz's case is peculiar in the comparatively large amount of urine passed; in the last 15 days of life the patient passed more than 76 oz. of urine and voided as much as 16 oz. two days before death.

The *morbid lesions* are remarkable in showing symmetrical necrosis of the renal cortex with thrombosis of the renal vessels supplying the cortex, usually of the interlobular arteries in the middle zone of the cortex. In some of the cases (Jardine and Teacher (Case 1), Klotz, Jardine and Kennedy (Cases 1 and 2), and my case) there was a narrow rim of unaltered cortex immediately under the capsule. Its escape appears to depend on the anastomosis between the arteries in the capsule of the kidney and those supplying the perirenal fat, and resembles the condition often seen in ordinary embolic infarction of the kidney.

The *vascular changes* are not absolutely identical in all the cases. Bradford and Lawrence's case showed old endarteritis with recent thrombosis; thrombosis of the interlobular arteries was reported in four other cases (Griffith and Herringham, Lloyd, Jardine and Teacher (Case 2), and Klotz); thrombosis of both the interlobular arteries and veins in four cases (Jardine and Kennedy (Cases 1 and 2), Jardine and Teacher (Case 1), my case); scanty thrombosis of the arterioles and capillaries in Jardine and Kennedy's third case; and thrombosis of the veins alone in Torrens's case. Torrens's case and my case differ from the other nine cases in the presence of thrombosis in the main renal and ovarian veins in addition. In these two cases three possibilities arise: (1) that the thrombosis in the intrarenal veins spread to, or caused the thrombosis in, the extrarenal vessels; (2) that the thrombosis in the two situations was simultaneous and independent; or (3) that the thrombosis spread from the large veins into the interlobular vessels. In the first instance the last view seemed probable in Torrens's case, but the absence of thrombosis of the extrarenal veins in the other published cases, which are in other respects similar, naturally causes some hesitation in adopting this explanation. In my case the left renal vein contained some loose granular clot, but the right renal vein was free from clot, although both the ovarian veins were thrombosed; extension of thrombosis from the extrarenal to the intrarenal vessels therefore appears less probable than in Torrens's case.

Cause of the thrombosis.—In the first recorded case (Bradford and Lawrence) endarteritis of the renal arteries was regarded as the cause of the thrombosis, but this appears to be almost the only instance in which this sequence is at all probable. In Jardine and Teacher's second case, in which there was slight endarteritis, the face and arms presented a lividity resembling that of the stage of local asphyxia in Raynaud's disease. This suggested the hypothesis that spasm of the renal arteries determined the thrombosis. But as the Raynaud phenomenon was not noted in the other ten cases this explanation cannot be adopted. Klotz, who described the thrombi as finely granular and due to hæmolysis of red blood corpuscles, believes that the thrombosis occurred simultaneously in all the renal vessels, as a result of certain metabolic disturbances of secretion in pregnancy. Kennedy, like Parkes Weber,[13] considers that the thrombosis is secondary to the necrosis, which may be assumed to be due to toxæmia. In favour of his view that the necrosis is due to the poison of eclampsia Kennedy points out that focal necroses were present in the liver in two out of his three cases. But Klotz, who compares the thrombi in the renal arteries to those in an eclamptic liver, definitely states that there was no focal necrosis in the liver in his case. As Dr. R. S. Trevor points out in his report on my case, there is an obvious objection to the view that the thrombosis is secondary to the necrotic changes in the cortex—namely, that a similar thrombosis does not occur in other forms of toxic nephritis however severe. I am not aware of any evidence that the blood of healthy parturient women is prone to coagulate. The phlebo-thrombosis seen in this state is due to infection; and there does not appear from the 11 recorded cases of symmetrical necrosis of the renal cortex, especially Klotz's, in which this point was considered, to be convincing evidence of a primary local infection of the kidney. Possibly the thrombosis is in the first instance due to the same toxæmia which causes degeneration of the renal cells, and that the thrombosis then causes complete necrosis of the cortex.

Remarks on the symptoms.—It is not at first sight obvious why the symptoms differ so markedly from those of anuria due to extremely acute nephritis. Herringham [4] has recently pointed out that "we do not in our ordinary views allow enough for the effect upon the general system which is produced by the diseased cells of the kidney," and he suspects that products are absorbed from them which are very hurtful. A possible explanation of the difference between the symptoms in the two conditions is that when the renal vessels become thrombosed the circulation is so interfered with that little or no absorption of toxic products from the necrotic renal cortex can occur. In connexion with this suggestion reference may again be made to Juhel-Rénoy's case of multiple microscopic embolism of the interlobular arteries with necrosis of the cortex in which there was anuria for 6 days, but with such freedom from uræmic symptoms that hysterical anuria was at first suspected; subsequently œdema of the feet appeared. In some of the 11 collected cases the uræmic symptoms were more obvious in the early days of the suppression of urine, and it might be urged that this was before thrombosis had supervened and brought the renal circulation to a standstill, and so prevented absorption of toxins from the damaged kidneys.

Occlusion of the renal arteries supplying the glomeruli and the convoluted tubes of the kidney might thus be thought to put the patient in a condition analogous to that of double nephrectomy. There are few published accounts of cases in which a single or solitary kidney has been removed. Polk [11] recorded extirpation of a misplaced kidney in which the woman lived 11 days after removal of her only kidney, the clinical features being much the same as in calculous anuria, and I have had verbal information of a few similar cases. In 1898 Bradford and Lawrence [1] stated that there is no great difference in the phenomena between complete extirpation of both normal kidneys on the one hand and double ligature of the ureters on the other hand in animals. And more recently Jackson and Saiki [3] found that when all the conditions are constant animals after double nephrectomy survive operations longer than animals with ligature of both ureters.

Œdema is not produced by symmetrical necrosis of the renal cortex; when present it is due to pre-existing nephritis.

Summary.—Symmetrical necrosis of the renal cortex is almost invariably related to recent delivery, and the child is almost always stillborn. The symptoms resemble those of obstructive anuria, but uræmic manifestations are not entirely absent. The kidneys may have been previously either healthy or diseased. The necrosis of the cortex is a characteristic lesion, and is intimately connected with thrombosis of the interlobular renal vessels, but the exact relation between these two events is open to discussion.

The following case was under my observation:—

Thombosis of the ovarian and renal veins; symmetrical necrosis of the renal cortex; anuria.—A woman aged 48, who had had 13 children, 9 of whom are living, and 2 miscarriages, was delivered on March 6th, 1913, of a macerated fœtus which was 2 weeks overdue. The labour, which lasted 12 hours, did not require instrumental assistance. On March 8th she became rather drowsy, and on the following day had abdominal pain and ceased to pass urine. She vomited every day from the date of her confinement until March 12th, when she was admitted under my care at St. George's Hospital. She was then anæmic, rather drowsy, but perfectly intelligent and alive to her surroundings. The heart, lungs, and abdomen appeared normal. The pulse, 100, had a systolic blood pressure of 115 mm. Hg. The temperature was subnormal. By catheter 1 c.c. of pale neutral fluid, containing blood, pus, and albumin, was drawn off from the bladder; on March 13th no urine could be obtained by catheterisation, but on the 14th and 15th a few c.c. with the same characters as before were drawn off. On the 13th a skiagram of the kidneys did not show any evidence of a calculus; before this was done Dr. J. A. Torrens, the medical registrar, had suggested that the condition was one of thrombosis of the renal veins, basing this on the resemblance to a case previously published by him.[12] On the 14th there was noticeable dyspnœa, and the blood pressure was

120 mm. Hg. On the 16th the blood pressure was 120 mm. Hg, dyspnœa was again very well marked, there was severe abdominal pain—mainly on the right side—and no urine was passed. The temperature ran up to 102° F. and the pulse to 136. On the 17th the temperature had fallen to 97°, and there was slight twitching of the face. At 2.30 P.M. the blood pressure had fallen to 60 mm. Hg; at 3.30 P.M. the face twitched slightly and the patient died quite suddenly. She was mentally alert to the end. There was no vomiting while in the hospital, and no œdema of the subcutaneous tissues.

The *necropsy* was performed by Mr. J. R. H. Turton. The right utero-ovarian plexus of veins was filled with dark blood-clot and produced a prominent swelling at the commencement of the right ovarian vein in the upper part of the broad ligament. There was not any extension of the clot into the iliac veins. The right ovarian vein was completely distended with clot and formed a conspicuous object on the posterior wall of the abdomen. The clot, about an inch in length and a quarter of an inch in diameter, projected into the inferior vena cava, lying free in the lumen of the vessel but not filling its cavity. The right ovarian vein opened into the inferior vena cava about one and a half inches below the renal vein which was free from clot. The left ovarian vein contained some granular clot adherent to its wall opposite the brim of the pelvis. There was a small pale clot, apparently detached from this, at the opening of the left ovarian vein into the left renal vein and lying free in the vein. The left renal vein in the hilum of the kidney contained a loose granular clot, extending from the hilum to within three-quarters of an inch of the entrance of the left ovarian vein. The vein wall was healthy. The kidneys, 8 oz. each, showed symmetrical necrosis of the cortex, which was dull yellow in colour; there was a thin rim of healthy cortex under the capsules. The remaining kidney substance appeared healthy, and the capsules stripped off normally. The arteries were healthy. Cultures from the spleen and the blood clot in the ovarian vein both showed *Streptococcus pyogenes*, pure in the blood clot, but with *Bacillus coli* in the spleen. The uterus was normally involuted.

I am indebted to Dr. Trevor for the following account of the microscopical examination:—

On microscopical examination the necrosis affects the cortex irregularly in both kidneys. For the most part the whole of the cortex from the medulla to the capsule is affected—a narrow zone only immediately under the capsule being free. The width of this zone even is variable and in one or two places, especially in the left kidney, the necrosis extends quite to the surface, which is slightly depressed. On the medullary side the necrosis reaches downwards in patches to the boundary zone, leaving unaffected areas of cortex in between. The latter, however, are not healthy, the tubal epithelium being degenerated, the cells vacuolated and broken up, whilst many of the tubules contain hyaline casts. There is a remarkable absence of any hæmorrhagic zone round the necrotic areas. On the medullary side there are scattered patches of congestion only, and even these are few. There is a well-marked zone of small-celled infiltration at the periphery of the enclosed portions, and collections of leucocytes are scattered irregularly throughout them. In the necrotic areas the outlines of the tubules can be made out easily, but the epithelium and the glomeruli are completely necrotic and do not show any nuclear staining. The interstitial tissue is also necrotic and does not show any nuclear staining. The arteries and veins in and contiguous to the necrosed areas are thrombosed, but no thrombosis can be detected in any of the vessels lying farther away. The arteries are not thick-walled and are quite free from any proliferation of the subintimal connective tissue.

The liver did not present any areas suggesting focal necroses to the naked eye, and on microscopical examination no such areas can be seen. The softened central portion consists of liver cells much altered in shape and shrunken in size. Some are markedly degenerate and vacuolated, others still stain well and have well-preserved nuclei. The normal arrangement of the cells, however, is destroyed, and the capillaries can no longer be made out. Here and there remains of a portal space can be made out without any thrombosis in the vessels. The whole area suggests a post-mortem disintegration.

In the kidneys those portions of the cortex, which are not necrosed, still show well the normal arrangement, although the tubal epithelium shows the changes already described. These changes are indistinguishable from those met with in the so-called "nephritis of pregnancy"—a degenerative lesion of the tubal epithelium due to toxæmia. It has also been shown that hyaline or agglutinative thrombi are met with in the capillaries in many infective and toxic states (*vide* Welch[14]). On the other hand, cortical necrosis does not occur in the kidney of acute nephritis, however severe the lesion may be, nor in cases of corrosive sublimate poisoning in which the tubal epithelium may even show calcification. It seems probable, therefore, in this case (at all events) that the necrosis, involving as it does both epithelium and interstitial tissue, is the direct sequence of the extensive thrombosis present in the vessels. Apart from the lesions present in the renal epithelium, the rapid disintegration in the liver points to there having been a grave toxæmia, and it is to this toxin, whatever its nature, that both the degeneration of the tubal epithelium and the hyaline thrombosis are due. To the latter must be attributed the final necrosis of the cortex, which is in a state similar to that seen in anæmic infarction.

Bibliography.—1. Bradford and Lawrence: Journal of Pathology and Bacteriology, Edinburgh and London, 1898, vol. v., p. 195. 2. Griffith and Herringham: Ibid., 1905, vol. xi., p. 237. 3. Halperin: "Clinical Manifestations of Hæmorrhagic Renal Infarct," Archives of Internal Medicine, Chicago, 1908, vol. i., p. 320. 4. Herringham: Quarterly Journal of Medicine, Oxford, 1913, vol. vi., p. 517. 5. Jackson and Saiki: Archives of Internal Medicine, Chicago, 1912, vol. ix., p. 79. 6. Jardine and Teacher: Journal of Pathology and Bacteriology, Cambridge, 1911, vol. xv., p. 137. 7. Jardine and Kennedy: THE LANCET, London, 1913, vol. i., p. 1291. 8. Juhel-Rénoy: Archives Générales de Médecine, Paris, 1886, vol. clvii., p. 385. 9. Klotz: American Journal of Obstetrics, New York, 1908, vol. lviii., p. 619. 10. Lloyd: THE LANCET, London, 1906, vol. i., p. 156. 11. Polk: New York Medical Journal, 1883, vol. xxxvii., p. 171. 12. Torrens: THE LANCET, London, 1911, vol. i., p. 99. 13. Weber, F. P.: THE LANCET, 1909, vol. i., p. 601. 14. Welch: System of Medicine (Allbutt and Rolleston), 1909, vol. vi., p. 697.

Upper Brook-street, W.

THE EFFECT OF ALTITUDE ON BLOOD VOLUME,

TOGETHER WITH FURTHER OBSERVATIONS ON THE BLOOD IN WARM-BLOODED AND COLD-BLOODED ANIMALS.[1]

BY GEORGES DREYER, M.D.,
PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF OXFORD;
AND
E. W. AINLEY WALKER, D.M.,
LECTURER IN PATHOLOGY IN THE UNIVERSITY OF OXFORD.

I.—A CONTRIBUTION TO THE STUDY OF THE EFFECT OF ALTITUDE ON THE BLOOD.

IT has long been known that the effect of living at high altitudes is to cause an increase in the number of red corpuscles per cubic millimetre of blood and an increase in the hæmoglobin percentage of the blood. The effects of living under permanently increased atmospheric pressure have not been fully followed out, but data exist regarding the effect of a descent from residence at a high altitude to a lower level.

Changes also occur in the blood volume of animals placed under novel conditions as regards altitude. Those changes are of a regular character, and follow definite laws. An analysis of the entirely admirable series of observations on the influence of high altitudes on the blood recorded by Abderhalden in 1902, which contain an almost inexhaustible wealth of information, has led us to the conclusion that the change of blood volume which occurs with a particular change of barometric pressure is proportional to the area of the body surface in different individuals of a given species. The blood volume of rabbits taken up from Basel (266 metres above sea level) and kept by Abderhalden at St. Moritz (1856 metres above sea level) still conforms to our formula, $B = \frac{W^{0.72}}{k}$. But k is now increased. That is to say, the blood volume is diminished by an amount exactly proportional to their body surface. For brevity we omit the long tables of calculations by means of which the value of n and k are determined from Abderhalden's figures. His 20 Basel rabbits calculated by the formula $B = \frac{W^{0.72}}{k}$ give a k of 2·43, while his 19 rabbits at St. Moritz had blood volumes which give a value for k of 2·72. This means a diminution of blood volume of 10·7 per cent. (or nearly 11 per cent.).

At the altitude of St. Moritz the hæmoglobin percentage shows an increase, and the number of red corpuscles per cubic millimetre undergoes a parallel increase. This change is at first due entirely to a rapidly occurring concentration of the blood, as is shown by the immediate rise in the number of red corpuscles and the hæmoglobin percentage (10 per cent. or more within some 24 hours). A similar immediate concentration can be seen in the figures obtained by Douglas, Haldane, Henderson, and Schneider in man on Pike's Peak and in a number of other published observations. But in Abderhalden's figures for rabbits, which had been at St. Moritz for from four and a half to eight weeks, the percentage hæmoglobin shows an increase from 11·74, the figure found at Basel, to 14·60. This is a percentage increase in hæmoglobin percentage of 25·1.

If the increase in hæmoglobin percentage were entirely due at this period to concentration of the blood, the blood volume should have been reduced by 20 per cent.; it was actually only reduced by 10·7 per cent.—that is to say, that of the percentage increase in percentage hæmoglobin 12 per cent. is due to the fall in blood volume (k rising from 2·43 to 2·72) and 13·1 per cent. is due to new formation of hæmoglobin. These together give the total increase in percentage hæmoglobin of 25·1 per cent., a decrease in blood volume of 10·7 per cent. and an increase of 11·7 per cent in the total hæmoglobin in St. Moritz rabbits as compared with the rabbits kept at Basel as controls. Abderhalden thought that the increased production of hæmoglobin at St. Moritz was only slight and not of great importance, but our calculations from his figures show that it amounted to 11·7 per

[1] Papers read at the meeting of the British Association for the Advancement of Science at Birmingham on Sept. 16th, 1913.

cent. of the total hæmoglobin, thus accounting for about one half of the increased hæmoglobin percentage found at St. Moritz.

This proves the occurrence of an active new formation of blood in the course of a temporary residence of some weeks' duration at a high altitude. Thus in animals examined at the stage of Abderhalden's St. Moritz rabbits we find that *about half* the increase in hæmoglobin percentage is due to concentration of the blood and about half to new formation of hæmoglobin and red corpuscles. But in animals examined within a day or two of their ascent to a high altitude the *whole* change is due to diminution of the blood volume. Similar conclusions can be drawn from an analysis of Abderhalden's figures for oxen and swine. In their recent work on Pike's Peak (3386 metres high—14,109 feet) Douglas, Haldane, Henderson, and Schneider state that "the increased percentage of hæmoglobin on Pike's Peak was apparently due in part, during the first few days, to concentration of the blood, but afterwards entirely to a large increase in the total amount of hæmoglobin." We maintain, however, that at first the increase is *entirely* due to concentration of the blood, and that afterwards it is partly due to concentration of the plasma and partly to increased formation of hæmoglobin. These observers further state that "along with this increase there was (except in the first few days) a slight increase in the blood volume." But we find that taking Abderhalden's observations on animals (observations carried out with the most minute accuracy and care) the blood volume was *never* increased, but was diminished by more than 10 per cent.

We can now take the matter a step further by investigating the *corpuscular richness* of the blood in Abderhalden's rabbits. The blood count in red corpuscles may be taken as an accurate measure of the hæmoglobin, since Abderhalden found that the hæmoglobin value per corpuscle was only very slightly increased, if at all, even after eight weeks at St. Moritz; and it certainly would not be altered after one day. Calculating, then, from six rabbits whose blood count had been determined at Basel, was again determined within one day of their arrival at St. Moritz, and then followed daily or at intervals until the last count on the day when they were washed out, we obtain the following results. After one day at St. Moritz the percentage hæmoglobin was increased from 11·77 to 13·80, an increase of 17·3 per cent. This corresponds to a decrease in blood volume of 14·7 per cent. After from 4½ to eight weeks at St. Moritz, when these animals were washed out, the blood volume and total hæmoglobin were determined. The blood volume was found to have decreased by 8·7 per cent. from its Basel value, and the total hæmoglobin had increased by 12·2 per cent. The increase in percentage hæmoglobin was from 11·77 to 14·46—that is, an increase of 22·8 per cent. Of this increase, 9·5 per cent. is due to the fall in the blood volume, and 13·3 per cent. is due to the new formed hæmoglobin. At the end of one day, however, at St. Moritz the percentage hæmoglobin is found to be increased from 11·77 to 13·80, an increase of 17·3 per cent., and since this can only have occurred by concentration of the plasma, the blood volume has diminished by 14·7 per cent. This concentration gradually undergoes a partial diminution *pari passu* with the new formation of hæmoglobin, so that at the end of the period of observation, when the new formed hæmoglobin amounts to 12·2 per cent. of the original total hæmoglobin, the blood volume is only reduced by 8·7 per cent. in these animals.

The next question is what takes place in rabbits brought back to Basel after a sojourn of from 4½ to 8 weeks at St. Moritz. The sequence of events may be stated as follows. When the animals were brought down again to Basel the blood diluted itself, and the blood volume reached the Basel normal in *four* days. The dilution did not occur so promptly after the descent as did the concentration after the ascent. In the first two days it was slight, but then became more rapid. But one cannot tell what access the rabbits may or may not have had to fluid during their return journey. At any rate, the blood volume has reached the normal for Basel after four days, and the blood constant is identical for the animals observed after four days, after five days, and after six to eight days respectively, being 2·43 for each set of observations (a total of 12 rabbits)—i.e., the same k as the k (2·43) for rabbits which remained at Basel throughout the investigation. This finding is further supported by the fact that after the third day and onwards the daily fall in *oxygen capacity* runs exactly parallel to the fall in percentage hæmoglobin. It is confirmed by calculating from the long series of rabbits in which the fall in percentage hæmoglobin and in red corpuscles per cubic millimetre was followed during the first five days after the descent. Within the first four days there is no appreciable diminution at all of the total oxygen capacity. That is to say, there is no recognisable disappearance of hæmoglobin from the blood. After this the excess of hæmoglobin which was produced at St. Moritz begins to disappear. It is almost all gone (within 1 per cent.) in the rabbits examined between 15 and 19 days from the date of descent, their percentage hæmoglobin being 11·84 against 11·74 in the controls, and their total oxygen capacity 11·60 as compared with 11·51 in the controls.

Douglas, Haldane, Henderson, and Schneider state that "on coming down from Pike's Peak the hæmoglobin percentage diminished much more rapidly than the total hæmoglobin, so that the blood volume was still further increased at first." These results in man, from three or four individuals, are totally at variance with the results obtained from Abderhalden's long series of experiments on rabbits. These observers also found that it required four weeks for the excess of blood volume to disappear. In rabbits it required only four days for the diminished blood volume to increase again to the normal. They found that the percentage hæmoglobin fell to normal much before the excess of hæmoglobin disappeared. But in rabbits after the first four days the fall in percentage hæmoglobin and in total hæmoglobin run parallel during the period of gradual return to normal. It is improbable that in these respects man differs so remarkably from other mammals. But all the disagreements are capable of explanation by the fact that the CO method was used for the determinations on man. At every point of divergence the fact that a proportion of the CO breathed must go to the extravascular hæmoglobin, along with the fact that this extravascular hæmoglobin is undergoing marked changes, first in the one direction and then in the other (first a steady increase and after the descent a steady diminution), is sufficient to explain the discrepancy in the results obtained. Indeed, it would have been possible to foretell that the results with the CO method would probably exhibit just these divergences.

II.—CONSIDERATIONS BEARING ON THE STUDY OF THE BLOOD AND VASCULAR SYSTEM.

The normal volume of the blood.—In mammalian animals the volume of the blood is proportional to the surface of the individual in any given species, and may be calculated from the formula $B = \frac{W^n}{k}$, where W is the weight of the animal in grammes, n is approximately 0·72, and k is a constant to be ascertained for each particular species. This statement we have shown, in association with Dr. W. Ray, to hold for a series of mammals both wild and tame—namely, rabbit, guinea-pig, mouse, wild rabbit, hare, and wild rat. And in response to criticism we have been able to confirm it absolutely for tame rabbits by an analysis of 126 independent observations collected from the literature. This analysis gave identically the same n as the n deduced from our own observations. In regard to birds, the other great group of warm-blooded animals, hitherto unpublished experiments carried out by us in association with Dr. H. K. Fry on fowls, pigeons, sparrows, and ducks, show that here also the blood volume is proportional to the surface. In these observations n has the value 0·70—0·72 in the formula $B = \frac{W^n}{k}$, and that this formula also accurately represents the surface area in these birds was proved by actual measurements of the surface in a large number of cases by means of the planimeter.

That the relation thus established between the blood volume of warm-blooded animals and the area of their body surface is associated with the homoiothermic character of these animals appears to follow from the results of observations carried out in the Department of Pathology at Oxford on cold-blooded animals by Dr. Fry and embodied in his still unpublished thesis. These observations were made on lizards and frogs, and show quite clearly that in both these animals the blood volume is neither proportional to the body surface nor to the body weight. But it varies as a power greater than unity (about 1·2) of the body weight, so that the volume follows the formula $B = \frac{W^{1\cdot21}}{k}$. This indicates the fact that in these cold-blooded animals the percentage

blood volume actually increases as the animal grows heavier, while in the warm-blooded animals it undergoes a steady diminution. The value of k as given by Fry's observations is 42·0 for frogs and 55·5 for lizards.

It is significant that in animals of such different shape as the lizard and the frog the value of n should be the same for both. This seems to indicate an underlying relationship to which we shall return on a future occasion.[2] Meanwhile, it may be stated that the value of n obtained by Fry is in agreement with the value of n as calculated by us from the old observations of Welcker and others on frogs. Their figures for frogs also give a k of about 42·0.

Further application of the surface relation.—In the course of our investigation of the blood volume of animals we had observed with interest that in those species which possessed a large blood volume the aorta was much larger than in species of a similar size which had smaller blood volumes. Accordingly we carried out a series of observations, in association with Dr. Ray, upon the sectional area of the aorta just above the semilunar valves. Here, again, we were able to show quite definitely that in both mammals and birds the sectional area of the aorta is proportional to the body surface and conforms to the formula $A = \frac{W^n}{k}$, where the value of n is 0·70–0·72. The sectional area of the trachea was also found to be proportional to the body surface. An interesting point now emerges from a consideration of our figures for guinea-pigs and rabbits. The rabbit has relatively a good deal more blood than the guinea-pig, and accordingly its aorta is relatively larger. On the other hand, it has much less hæmoglobin than the guinea-pig, but its trachea is very much larger, thus doubtless rendering easier the intake of oxygen.

A further point of interest may be mentioned here—namely, that in examining animals of different species we have found the ratio of the weight of the heart muscle to the total oxygen capacity of the circulating blood to be approximately constant from species to species in a number of cases.

Influence of sex.—As regards sex, we find that in the mammals which we have examined the blood volume is somewhat smaller (about 3 per cent.) in the female animal than in the male of the same weight. This relationship is, however, altered during pregnancy and in the puerperal condition, when the blood volume of the female is considerably increased. The sectional area of the aorta is also smaller in the female than in the male of corresponding weight, while so far as our observations go, that of the trachea is somewhat larger in the female than in the male. Thus the male which has the larger blood volume has a larger aorta, while the female, which has a somewhat lower percentage of hæmoglobin in its blood than the male, is provided with a relatively wider trachea for the admission of oxygen. This difference between the sexes within the same species is of the same character as the differences in the blood volume, aortic cross section, hæmoglobin percentage and tracheal area existing between different species, already pointed out above, in comparing the rabbit with the guinea-pig. In drawing attention to these facts we intentionally omit for the present any reference to certain other factors which we know to be of importance—namely, the velocity of the blood flow, the frequency of the heart beat, the rate of the respiration, and the amount of the respiratory exchange.

Influence of age and species.—As regards age, by which we here imply the progressive increase of the animal in size and weight up to full growth, it may be stated that in any given species younger and lighter animals possess a lower percentage of hæmoglobin both in their circulating blood and in their muscles than the older and heavier individuals. And since, as Ranke showed, the muscles increase more than in proportion to the increase in body weight, it follows that the muscle hæmoglobin increases relatively much more rapidly than the weight of the animal. This fact is, as we have previously pointed out, an important source of error in the application of the CO method for the determination of blood volume.

In different species it is strikingly evident that the mode of life and muscular activity of the species is a factor of importance in determining the amount and the distribution of the hæmoglobin in the body. Animals which have a high hæmoglobin percentage in their blood have in general a high hæmoglobin percentage in their muscles, and in consequence dark flesh, while those which have a lower hæmoglobin percentage in the blood have also a lower percentage in the muscles and have pale or white flesh. This is seen on comparing wild rabbits with tame rabbits, hares with wild rabbits, ducks with fowls, and adult animals with younger animals of the same species. Moreover, on comparing the hare with the wild rabbit it is seen that the former animal, which exhibits both great endurance and remarkable speed, has a higher hæmoglobin percentage, darker muscles, a heavier heart, and a larger aorta than the latter, whose natural mode of life calls for less exhibition of long maintained muscular effort and staying power. The hare has more than double the blood volume, 30 per cent. more hæmoglobin in its blood, and about three times as much heart muscle as a wild rabbit of the same size. Similar facts apply to particular muscles and groups of muscles in different animals. The wing muscles of birds which fly are always dark in different degrees, while those of fowls are pale. But in all animals the heart, diaphragm, and intercostal muscles are always dark.

The regulation of the volume of the blood.—Under normal conditions the volume of the blood of mammals is very delicately adjusted. The restoration of volume, which, as is well known, quickly occurs after hæmorrhage or transfusion (whether of defibrinated blood or of isotonic saline solutions), begins *immediately*. It is already recognisable by a definite and measurable change in the hæmoglobin percentage when only a very small percentage of fluid has been removed or introduced. This fact adversely affects the value of many of the experiments which have been carried out on bleeding and transfusion, since it has evidently escaped due recognition. The application of an elastic bandage to a limb has practically the effect of a transfusion of blood by considerably increasing the volume of the blood circulating in the now diminished vascular area. Accordingly it is found that a rapid concentration of the blood indicated by an increase in the hæmoglobin percentage occurs and is already recognisable within a few minutes of the application of the bandage. On removing the bandage the blood quickly restores itself to its former volume by a process of dilution. The effect of cold or warmth applied to the surface is largely comparable to the effect of applying an elastic bandage or removing one from from a limb. By its effect upon the superficial vessels it leads to a concentration or dilution of the blood as the case may be.

In further experiments the effect of certain chemical substances on the volume and concentration of the blood has been investigated. In many experiments on the blood and respiration it has hitherto been tacitly assumed that the blood volume undergoes no significant alteration during the period of observation. We find, however, that this is not the case. The presence of an increased amount of carbon dioxide in the respired air produced by breathing into a confined space quickly leads to a dilution of the plasma and an increase of blood volume which may amount to 10 per cent. or even more. This is a new factor which will come into account in interpreting many of the experiments carried out by respiratory methods. The inhalation of oxygen, on the other hand, leaves the blood volume unaltered. The administration of amyl nitrite which causes vascular dilatation also leads to an immediate dilution of the plasma. This observation renders it unlikely that an abiding fall in the blood pressure can be brought about under normal conditions by the production of active vaso-dilatation. The introduction into animals of chloral hydrate in quantities sufficient to cause anæsthesia produces rapid concentration of the blood with a corresponding diminution of blood volume. This has been demonstrated not only by estimating the increase which occurs in the hæmoglobin percentage, but also by direct determination of the blood volume by means of washing out experiments. The degree of concentration varies with the dosage—a fact of importance in relation to the pharmacological action of this drug, and one which renders it an unsuitable anæsthetic to employ in work upon the blood and circulation. On the other hand, ether anæsthesia leaves the volume of the blood unaltered.

[2] This relationship in the frog is a relationship to the mass of the osteomuscular system, which also follows the formula $M = \frac{W^{1\cdot21}}{k}$.

VERONAL POISONING.[1]

BY WILLIAM HENRY WILLCOX, M.D., B.SC. LOND., F.R.C.P. LOND., F.I.C., D.P.H., &C.,
PHYSICIAN TO ST. MARY'S HOSPITAL, LONDON; SENIOR SCIENTIFIC ANALYST TO THE HOME OFFICE, ENGLAND.

THE chemical formula of veronal is—

$$\begin{matrix} C_2H_5 \\ C_2H_5 \end{matrix} > C < \begin{matrix} CO\ HN \\ CO.HN \end{matrix} > CO.$$

It is chemically described as malourea, or diethyl malony urea, or diethyl barbituric acid. "Veronal" is a registered trade name, and another name of the same character also used for this compound is "hypnogen." Veronal is a white crystalline powder, odourless; melting point, 191° C. It has a bitter and somewhat nauseous taste, it has an acid reaction to litmus, and it is only slightly soluble in cold water. At 20° C. 1 part is soluble in 146 to 147 of water, at 90° C. 1 part is soluble in 23 of water, and at 100° C. 1 part is soluble in 15 of water. Veronal is easily soluble in alkaline solutions. It is soluble in alcohol, ether, acetone, or acetic ether, but it is not readily soluble in chloroform. Veronal was discovered in 1902 (Professor E. Fischer and Professor J. Mering). It was prepared [2] by treating diethyl malonic acid ester with urea and sodium ethylate. Another good method of preparing veronal is by treating diethyl malonyl chloride with urea.

Veronal has for the past seven years been very widely used in this country as a hypnotic. Indeed, its use has become well known to the public, so that there is reason to believe that commonly the drug has been taken for insomnia without the advice or prescription of a medical man. It is undoubtedly a powerful hypnotic. Messrs. Merck and Bayer, the introducers of the drug, claim that they have always understood that it was "an exceedingly potent hypnotic," and that they have always laid stress on the danger of exceeding the therapeutic doses. A letter to this effect from the Bayer Company, Limited, appeared recently.[3] There is no doubt that soon after its introduction veronal became popular as a hypnotic, and it is quite certain that its exceedingly potent action was not fully appreciated by the medical profession and still less so by the public. It is spoken of as "a sleep-producing drug of a relatively harmless character"[4]; and Professor Bradbury [5] has described it as "one of the quickest, safest, and most reliable hypnotics." These statements, of course, referred to therapeutic doses, but it is to be feared that it has been sometimes assumed that because the drug is harmless in therapeutic doses it may be given in doses considerably in excess of this. It is most important that the medical profession and the public should realise that the therapeutic dose cannot be exceeded with safety except in very special cases.

The therapeutic dose of veronal for an adult is given in the British Pharmaceutical Codex for 1907 as 5 to 15 grains; while in the latest edition of that work (1911) the dose is given as 5 to 10 grains, an indication that perhaps the potent action of the drug had not been fully recognised in 1907. The Bayer Company in a recent pamphlet on veronal give the dose for an adult as 5–10–15 grains, but they state "it should be clearly understood that in ordinary cases of insomnia the 5 grain dose is quite sufficient for an adult, and that the dose should only be repeated after a reasonable interval." In a single therapeutic dose it usually acts fairly quickly, producing sleep within an hour or so, and the sleep lasts for several hours.

Toxic symptoms may occur after the administration of veronal, and these may be the result of: (1) a special idiosyncrasy causing a susceptibility to a small or moderate dose; (2) an excessive dose having been taken; (3) repeated small doses as in the veronal habit. The toxic symptoms which occur after a single large dose are drowsiness, headache, and sometimes ataxy accompanied by a reeling gait. The patient falls into a deep sleep from which he can only be roused with difficulty. In severe cases the sleep deepens into coma, and the patient becomes cyanosed with rapid and often stertorous breathing. In this stage it is very common for a marked rise of temperature, even to 103° F. or more, to occur, and a physical examination of the lungs will probably show areas of dulness on percussion, increased vocal resonance, bronchial breathing, and moist sounds. In other words, all the clinical signs of pneumonia will be present. These signs will be accompanied or followed by those of a general œdema of the lungs, such as moist bubbling râles all over. It is quite easy for a severe case of veronal poisoning to be mistaken for pneumonia, and I have known the mistake made on several occasions. When the condition of deep coma and pulmonary symptoms develops after the taking of a large dose of the drug it is uncommon for recovery to occur. Sometimes a condition of coma and high temperature will last for as long as four days before death supervenes, but after a very large dose death may occur in less than 24 hours.

It is said that digestive disturbances, nausea, and vomiting occur from the drug. These undoubtedly occur in chronic veronal poisoning (veronal habit). In my experience they are uncommon in cases where a single large dose is taken. Skin rashes have been described as a result of veronal. These are erythematous in type and of a rubeoliform or scarlatiniform character. It is stated that occasionally urticarial rashes occur and also extreme pruritus and œdema of the face. In my experience skin rashes are not common after veronal. It is said that urinary disturbances, such as suppression, albuminuria, hæmatoporphyrinuria, and hæmaturia, may occur from the drug. I have not observed these symptoms except slight albuminuria. In several severe cases of veronal poisoning I have noticed a remarkably free excretion of urine, but often the urine has to be withdrawn by the catheter when the patient is in a comatose condition.

In chronic veronal poisoning (veronal habit) the patient often develops an abnormal mental condition, visual hallucinations are common, and also delusions may occur; the whole mental balance may be upset and a sort of double self exist subjectively. In these cases tremors and marked ataxy are common, and the condition may resemble cerebellar disease. The speech is often affected, and thick and indistinct, and disturbances of sight may occur. The gait in these cases is commonly quite reeling, similar to that of a drunken person. The veronal habit causes a complete disorganisation of the moral sense, just as is the case with the morphia and cocaine habits.

In cases of renal disease veronal is much more toxic than with normal patients. Also it is important that constipation should be avoided if the drug is being given frequently, since otherwise toxic symptoms may develop. In these conditions a cumulative action may occur if it is given in therapeutic doses continuously.

Fatal dose.—Cases of death have been recorded after taking veronal, even with such small doses as 10 grains. In these cases probably other factors were present, and death was not entirely due to the drug. In a healthy adult it may be taken that a dose of about 50 grains would be dangerous, and might be regarded as an average minimum fatal dose. It is well known that much larger doses have been taken without death resulting, but in these cases serious symptoms such as deep coma have occurred, and there has been grave danger. On the other hand, fatal cases are recorded from doses of 1 gramme (15 grains).

It must be remembered that in the recorded cases of fatal veronal poisoning the patients have often been the subject of some other disease, or of some other form of poisoning, such as alcohol, morphine, &c., and the veronal taken may have not been entirely responsible for the fatal issue. Also it must be borne in mind that in fatal cases of veronal poisoning it is usually almost impossible to say what was the exact dose taken, since the early onset of coma usually prevents any information being obtained from the patient. A reference to the cases of which details are given will illustrate this.

Tolerance to veronal.—Undoubtedly tolerance may be established in some cases, but a great tolerance comparable to that in morphine and cocaine takers does not occur. Even in cases where patients are accustomed to taking the drug it must be accepted that a dose of about 50 grains is likely to produce deep coma which may be followed by death.

Treatment of acute veronal poisoning.—If the patient is

[1] A paper read at the Seventeenth International Congress of Medicine, August, 1913.
[2] E. Fischer: Liebig's Annalen der Chemie, 335, 334, 1904.
[3] Brit. Med. Jour., July 5th, 1913.
[4] Dixon Mann: Forensic Medicine and Toxicology, 1908.
[5] Allbutt's System of Medicine, vol. viii., 1910, article on Insomnia.

seen soon after taking the drug—i.e., within four hours—it will always be most advisable to pass into the stomach a soft stomach tube to which is attached a piece of plain rubber tubing about 3 feet long, in the end of which is a glass funnel. There is no risk in the careful passage of a soft stomach tube. The mouth should be kept open by means of a suitable gag while the tube is being passed, and the passage of the tube down the œsophagus is readily brought about by first guiding the end with the left fore-finger placed in the mouth. About 20 inches of stomach tube should be passed beyond the teeth, the tube being gently pushed down with the right hand. During the process of passing the stomach tube the mouth should be in the mid-line of the body, the head not being rotated. When the tube is in the stomach no air will issue from its funnel end. Some warm water should now be placed in the funnel, and the funnel raised, so that the tube becomes filled with water. Before the funnel is empty it is quickly depressed, and this will start a syphon action, so that the contents of the stomach can be syphoned out. These should be carefully reserved for future analysis. When the stomach has been emptied as completely as possible it is very advisable to wash it out thoroughly by introducing about 2 pints of warm water and then syphoning this off. This washing out should be repeated three or four times and the stomach emptied as completely as possible. Before withdrawing the tube about 1 pint of hot strong coffee with some milk in it, and an ounce of castor oil or other suitable aperient, should be introduced and left in the stomach. The stomach tube is now withdrawn.

The above details have been given because it is sometimes imagined that there is risk in washing out the stomach in cases of veronal poisoning. There is no risk if the operation is carefully performed within a few hours of taking the poison. The risk of not doing this is infinitely greater. After six hours or so from taking the poison most of it will probably have passed from the stomach into the intestine, so that washing out of the stomach is not likely to be of much avail in removing the poison. Unless the patient is *in extremis* the stomach tube may often then be passed with advantage and a rapid washing out performed, strong coffee being introduced as described above.

Cardiac stimulants should be given, such as strychnine hydrochloride gr. 1/30, with digitalin gr. 1/100 every four hours. Warm normal saline should be given subcutaneously, and also rectal injections of normal saline containing 4 per cent. of glucose should be given in amount of 15 oz. every four hours. If there is much cyanosis oxygen should be given, and when the pulse is feeble the oxygen may with advantage be passed through a wash-bottle containing absolute alcohol, since the combination of oxygen and alcohol vapour is a valuable cardiac stimulant. During the comatose state attention must be paid to the bladder, the urine being drawn off by a catheter if necessary. Any urine passed must be carefully preserved for analysis. If urine is not being excreted freely injections of the hypodermic solution of caffeine may be given every four hours. Other stimulants that may be given if necessary are camphor and pituitary extract hypodermically.

It must be remembered that in acute veronal poisoning the state of coma which comes on soon after taking the drug may last several days. It will therefore be necessary to feed the patient. Warm milk, and milk and coffee may be given every four hours, either by the stomach tube or by a nasal tube carefully passed.

Post-mortem appearances.—Marked cyanosis is often present at the time of death, and this may persist after death, there being bluish discolouration of the lips and face, and also of the finger-nails. Post-mortem staining is usually well marked. The heart usually shows marked dilatation, this condition affecting the cavities of both sides. Usually the dilatation is more marked in the right auricle and ventricle than in the corresponding cavities on the left side. The great veins are full and the blood is often fluid. The air passages are congested and contain mucous exudation. The lungs show almost always marked hypostatic congestion and œdema in their dependent parts, and portions so affected commonly sink in water. Frequently patches of pneumonic consolidation are present in the lungs, and lymph may be present on the pleural surface of these areas. The pneumonic areas may be quite extensive, and they are to be distinguished from the general hypostatic congestion and œdema above mentioned. No characteristic changes occur in the stomach and intestines. The brain and abdominal viscera usually show marked congestion.

In conclusion, it may be said that the post-mortem signs of veronal poisoning are not specially characteristic. They are those of death from gradual heart failure, complicated by œdema and hypostatic congestion of the lungs. Such signs may be commonly found in death from natural causes.

Toxicological analysis.—There are no very characteristic chemical tests for the drug. Veronal gives well-marked crystals which are not readily soluble in water, but readily soluble in weak caustic soda solution. The melting point of veronal, 191° C., is very useful for identification, but it is necessary that it be isolated in a pure condition, otherwise its melting point will not agree with the theoretical. Recrystallisation once or twice may be necessary before a constant melting point is obtained, and sometimes purification by treatment with blood charcoal is necessary. The amount isolated from a given case may be sufficient to admit of purification and determination of the melting point, but often the quantity of poison found is too small to permit of this. If a substance is isolated which is crystalline and identical in melting point with veronal, valuable confirmation is obtained by mixing the substance found with veronal and taking the melting point of the mixture. This will be unaltered if the substance found is veronal.

Veronal solution gives no precipitate with the reagents commonly used as alkaloidal precipitants. Veronal solution if boiled with solution of caustic potash (20 per cent.) is not decomposed, and the addition of Nessler's reagent gives no brown colouration. Veronal in the solid form if fused with caustic potash gives a nasty rancid smell. If the tube is cooled and water is added and then Nessler's reagent a well-marked brown colouration is produced. Veronal solution, if treated with two drops of dilute nitric acid and then with Millon's reagent, gives a white gelatinous precipitate, soluble in excess of the reagent.

Veronal is extracted from viscera by taking a given weight of the organ (about 120 grm). This is cut up finely and treated with 95 per cent. alcohol, just acidified with acetic acid. The extraction with alcohol is continued for 24 hours at 35° C. The alcoholic liquid is poured off, and the residue is treated with fresh alcohol as before. Four extractions are made. The alcoholic extracts are mixed, filtered, and evaporated to a syrupy consistence. Absolute alcohol (about 200 c.c.) is now added, and the mixture allowed to stand for a short time. It is then filtered, and the filtrate is evaporated to a syrupy consistence. The liquid is now taken up with water and the turbid mixture is filtered. The filtrate should be concentrated by evaporation below 35° C. to about 15 c.c. If the liquid is not highly coloured it may be extracted with ether (two volumes) successively for four times. The ethereal solutions are filtered, mixed, and gently evaporated in a weighed glass dish. The residue will contain the veronal present. It may be white and crystalline, but usually there is some brown tint, and further purification may be necessary.

Where the aqueous extract of the viscera is much coloured it is better to treat it with slight excess of lead acetate; the mixture is filtered and the excess of lead acetate removed by precipitation with sulphuretted hydrogen; the liquid is again filtered and concentrated by evaporation in a current of air to about 15 c.c. The liquid thus obtained is extracted with ether as above described. Any veronal present will be obtained in a fairly pure state. The residue, purified if necessary, is carefully tested for veronal by the above-mentioned tests.

Veronal is a poison which is distributed fairly evenly throughout the body; thus the abdominal viscera do not appear to have that selective action for the drug which they show with arsenic and some of the alkaloidal poisons. It is a drug which is rapidly excreted by the kidneys, and in a fatal case of veronal poisoning, where the patient has lived for 24 hours or more after taking the poison, it is probable that a considerable quantity will have been excreted in the urine. It follows, therefore, that the amount found in the whole body after death will not represent all the poison taken. In fatal cases of veronal poisoning, where death occurs after 24 hours, something like 40 to 50 per cent. of the poison will probably have been excreted in the urine before death. It is always most important that the urine excreted should be saved for analysis.

Extraction of veronal from urine.—About 200 c.c. of urine are taken. If a larger quantity is available this may with advantage be concentrated to 200 c.c. by evaporation at a low temperature. The urine is treated with a slight excess of acetate of lead solution, and the mixture after standing is filtered. The excess of acetate of lead is precipitated by sulphuretted hydrogen and the liquid is filtered. The filtrate is evaporated at a low temperature to about 60 c.c., a little blood charcoal is added, and the mixture filtered after standing a few hours. The filtrate is concentrated by evaporation at a low temperature to about 30 c.c. This is extracted with double the volume of ether three times, the ethereal extracts are mixed, filtered through a dry paper, and are evaporated to dryness at a low temperature. The crystalline residue is submitted to the tests for the drug, and the crystals are carefully compared with those obtained by evaporation of an ethereal solution of veronal.

Statistics of veronal poisoning.—A table is appended showing the returns of the Registrar-General for deaths from veronal poisoning occurring in England and Wales up to 1910. The later returns are not yet published. By the kindness of three coroners of large districts—viz., Mr. C. Luxmore Drew, Mr. W. Schröder, and Mr. G. Vere Benson—I am enabled to give up to date the cases of veronal poisoning in their respective districts. Statistics are very valuable as giving an indication of the frequency of cases of veronal poisoning, but it must be remembered that (1) cases of death which are really due to veronal poisoning may be overlooked and mistaken for pneumonia or other condition producing coma; (2) often veronal may be an accelerating factor in causing death, but some other toxic influence or disease plays an even more important part in bringing about a fatal issue, so that in some cases where "veronal poisoning" is the alleged cause of death it cannot be fairly regarded as being entirely responsible.

Veronal Poisoning: Statistics for England and Wales.

Year.	Accident.		Suicide.		Manslaughter.	Murder.	Total.
	Males.	Females.	Males.	Females.			
1904	—	—	—	—	—	—	—
1905	—	—	—	—	—	—	—
1906	—	1	—	—	—	—	1
1907	1	—	—	—	—	—	1
1908	2	—	2	—	—	—	4
1909	6	5	—	2	—	—	13
1910	7	5	2	1	—	—	15

Cases of Fatal Veronal Poisoning in Three Coroners' Districts.

Year.	District of Mr. Luxmore Drew.	District of Mr. Schröder.	District of Mr. Vere Benson.
1909	1	2	0
1910	1	0	2
1911	1	3	1
1912	3	0	1
1913 ... ... (Up to July.)	1	1	1

The following recent cases, which have been investigated by Dr. B. H. Spilsbury, of St. Mary's Hospital, and myself, are of interest and show the importance of considering the details of each case.

CASE 1.—Female, aged 27. The patient was probably addicted to alcohol. She was found unconscious in her bedroom, and death occurred after 42 hours. Empty bottles which had contained veronal tablets were found in the room. The post-mortem examination showed bright red post-mortem staining and cyanosis of the finger nails. The heart showed dilatation of all the cavities and brown atrophy of its muscle. The lungs showed marked œdema and hypostatic congestion; portions sank in water. *Verdict* of coroner's jury: "Death from veronal poisoning." There was no knowledge of the quantity of the drug taken.

CASE 2.—Female, aged 60. The patient was addicted to the taking of veronal, trional, and morphine. She was comatose for a few hours (at most eight) and died. In the bed was found a hypodermic syringe which contained morphine. An empty veronal bottle was found in the bedroom. A recent hypodermic puncture was present on the left thigh. The heart showed dilatation. The lungs showed hypostatic congestion and œdema. A large malignant growth was present in the stomach, and a scirrhous growth was present in the right breast. *Verdict*: "Death from veronal and morphine poisoning." In this case it is doubtful if veronal really played any important part in causing death.

CASE 3.—Male, aged 54. The patient had suffered from tabes dorsalis for two years. He was found dead in his dressing-room two hours after being seen by his wife in a conscious condition. A tumbler was found in the room containing a small quantity of veronal. The evidence in this case showed that the deceased could not have taken more than 20 grains of the drug, and probably much less was taken (about 5 grains only). The post-mortem signs showed dilatation of the heart and brown atrophy of its muscle. The lungs showed œdema and hypostatic congestion. *Verdict*: "Syncope from heart disease accelerated by veronal taken to produce sleep while patient was suffering from tabes dorsalis." In this case it is doubtful if the drug was a factor in causing death.

CASE 4.—Male, aged 37. The patient was found in his bedroom unconscious, and he remained comatose for about 78 hours before death. He was cyanosed and had all the clinical symptoms and physical signs of acute pneumonia. The temperature was from 100° to 105° F. the last two days. An empty bottle which had contained veronal tablets was found in the bedroom. The deceased was known to be addicted to the drug. Post-mortem examination showed marked post-mortem staining, dilatation of the heart, and hypostatic congestion and œdema of the lungs. *Verdict*: "Death accelerated by veronal poisoning." In this case probably a large dose was taken, but no exact evidence could be obtained.

CASE 5.—Female, aged 38. The patient suffered from an adherent pericardium with calcification. There was marked ascites and œdema. She became unconscious, and died after about 13 hours. Dilatation of the heart and hypostatic congestion and œdema of the lungs were present. The evidence in this case showed that probably 125 grains of medinal were taken. *Verdict*: "Death from heart disease, accelerated by medinal, taken with suicidal intent."

CASE 6.—Male, aged 39 years. The patient was found in a comatose condition, and died after being in a state of coma for about 80 hours. Post-mortem examination showed dilatation of the heart, and the lungs showed hypostatic congestion and œdema with patches of acute broncho-pneumonia. Veronal was found in the urine. Two empty tablet bottles were found in his bedroom. The deceased was known to be a veronal taker. *Verdict*: "Death from heart failure and pneumonia, accelerated by veronal poisoning." In this case there was no evidence as to the quantity taken. The deceased was suspected of being addicted to alcoholic excess.

CASE 7.—Female, aged 42. The deceased had threatened to poison herself by veronal. She was seen alive at 2 P.M., when she said she was going out for a walk. She was found dead in bed 20 hours afterwards. Post-mortem examination showed marked post-mortem staining and cyanosis of nails and lips. There was marked dilatation of the heart. The lungs showed hypostatic congestion and œdema; also there were patches of acute broncho-pneumonia in both lungs. *Verdict*: "Death from veronal poisoning (suicidal)." There was no evidence of the exact dose taken, but it was probably over 100 grains. (125 grains of veronal were known to have been purchased three weeks before death.)

CASE 8.—Male, aged 56. The patient had a fall of over 20 feet, fracturing the sternum and four ribs. He died about 48 hours afterwards. After the injury he was given therapeutic doses of paraldehyde and veronal, which were prescribed by his medical man. The heart showed dilatation and fatty degeneration of its muscle. The lungs showed hypostatic congestion and œdema. *Verdict*: "Death from shock following injuries accelerated by paraldehyde and veronal taken as hypnotics." In this case it is extremely doubtful if death was in any way accelerated by veronal.

CASE 9.—Male, aged 62. The patient took 53 grains of veronal. He became comatose, and on examination was found cyanosed, with temperature of 103° F., respiration 66, and rapid, feeble pulse. There was marked dulness over the whole of the upper lobe of the left lung, with crepitations and marked tubular breathing. He was treated for veronal poisoning and made a complete recovery. The coma lasted about 24 hours. The recovery in this case was remarkable, as it does not usually follow such very grave symptoms as were observed.

CASE 10.—Male, aged 28. A post-mortem examination showed some dilatation of the heart. The lungs showed hypostatic congestion and œdema and a small patch of pneumonia in the lowest lobe of the right lung. Chemical analysis showed veronal to be present in all the organs examined. The amount calculated as being present in the whole body was 75 grains. The evidence in this case showed that the deceased had taken a large dose of veronal, after which he rapidly became comatose and died after about 32 hours. Probably in this case a dose was taken of something like double that found in the body. *Verdict*: "Death from veronal poisoning, but there was no evidence to show how it was administered."

Medinal is the mono-sodium salt of veronal. It is very soluble in water and is therefore more rapid in action. Its toxicology is otherwise exactly similar to that of veronal.

Veronal, by its bitter taste and insolubility in aqueous solutions, could not easily be administered to a normal person in a poisonous dose without the taste being recognised; also the gritty insoluble particles might be detected. Medinal, though very soluble, has a bitter, nauseous taste which would almost certainly be recognised by a normal person taking it. The alkaline nature of medinal causes the drug to alter the colour of wines such as hock, &c., and this change in colour might arouse suspicion were any attempt made to administer the drug in this way unknown to the taker.

Proponal is dipropyl barbituric acid. It is more poisonous than veronal, but otherwise its toxicology is similar.

Luminal is diphenyl barbituric acid. It is more poisonous than veronal, but otherwise its toxicology is similar.

Preventive measures.—Veronal and its derivatives and allied substances are undoubtedly very useful therapeutic agents when carefully prescribed. It is most important, however, that powerful hypnotic drugs of this character should only be taken with the knowledge and consent of a medical practitioner and on his written prescription. It

would also be advisable if the dispensing of such prescription were not repeated without the written sanction of the medical man. The frequency of cases of veronal poisoning in this country has caused His Majesty's Privy Council to approve of the following addition to the Poisons and Pharmacy Act of 1908: that "diethyl barbituric acid, and other alkyl, aryl, or metallic derivatives of barbituric acid, whether described as veronal, proponal, medinal, or by any other trade name, mark, or designation, and all poisonous urethanes and ureides," ought to be deemed poisons within the meaning of the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, and ought to be deemed poisons in Part II. of the Schedule of Poisons to that Act. The effect of this resolution is that veronal and the other substances named and included in it can only be sold by a qualified pharmacist, and that all of these substances must be labelled "Poison," and must bear the name and address of the vendor.

The dangers from veronal poisoning are to some extent safeguarded by this valuable addition to our legislature, but the best safeguard of all will be a loyal coöperation of pharmacists with the medical profession in protecting the public from the abuse of drugs which have a potent though useful therapeutic action.

Welbeck-street, W.

A CLINICAL STUDY OF THE CHIEF FUNCTION OF THE PERITONEUM.[1]

BY JOHN HOWELL, M.B., B.S. LOND., F.R.C.S. ENG.,
HONORARY SURGEON TO THE CHELTENHAM GENERAL HOSPITAL, ETC.

THE chief function of the peritoneum is that of a "perienteric trap for the reception and annihilation of micro-organisms which *constantly* and *normally* (i.e., without producing symptoms) permeate the intestinal wall." It is part of the duty of certain organs intimately connected with the peritoneal cavity, of which the liver, stomach, and the intestines are the chief, to excrete the toxic products formed therein, including, in times of stress, the bacteria themselves, with the minimum risk of contamination to the remainder and more important parts of the body.

In animal life the cœlom is next in antiquity to the archenteron or primitive alimentary canal. When the organism consisted only of an outer layer, ectoderm, protective, sensitive, and reproductive, and an inner, endoderm, digestive and absorptive, the even distribution of nutritive material was a simple matter. When, however, a third layer, mesoderm, was developed, primarily for support and locomotion, secondarily for reproduction, any further progress in usefulness of this layer would be considerably hampered if its proper supply of nutriment continued to depend upon a correspondingly complex evagination of the alimentary canal amongst its cells. This difficulty would be solved by cleavage of the mesoderm into an inner thin layer, the splanchnopleure, and an outer layer, the somatopleure, with a cavity between (the cœlom) containing fluid kept in motion by the movements of the organism. Not only did this cavity serve as a nutriment distributor, but it also became a receptacle for the products of metabolism; the cavity was therefore placed in direct communication with the exterior. In addition the reproductive cells were shed into its interior and thus found an easy exit. In the trochosphere larva of the polychæta we find a large perienteric cavity, which is not the cœlom (it is, in fact, the original blastocele), and for reasons which I cannot enter into here it is clear that none of the above functions are required of it, for it is practically a cœlenterate, the mesoderm being relegated to the very hinder end near the anus. Why, then, this persistence of the blastocele? I suggest that here we get the first glimpse of the utility of a perienteric cavity as a trap for organisms. I may reasonably assume that along with the food a large number of cocci, bacteria, and protozoa would pass into the alimentary canal of this animalcule, some of them actively hostile. With a large number of these the cells of the endoderm would be able to deal, but it can be imagined that from the number or virulence of the invading organisms the resistance of this first line of defence would be not infrequently overcome. It is important that the contents of the canal should be rid of this contamination before they reached the hinder end, for here, surrounding the endoderm, are the mesodermic bands which contain the elements essential, not only for the development of the adult polychæte, but, in the form of reproductive cells, for that of countless numbers of annelids. Any bacteria, therefore, which succeed in defeating or eluding the endodermic cells only break into, they may even be enticed into, a lethal chamber containing lethal fluid, which frees itself of toxins through the primitive "pronephridia."

To proceed a step further on the road of evolution, let us consider the cœlom of the earthworm, with which you are no doubt familiar. It is strikingly large, though the distribution of nutritive material and conveyance of the products of metabolism are performed by an elaborate blood circulatory system, whilst the formation of reproductive cells has been relegated to one or two segments only. We have to explain why—(1) the cœlomic cavity is relatively so large, a characteristic of this and allied types; (2) it communicates directly with the exterior by dorsal pores after the eighth segment; (3) dorsal pores are not found in the first eight segments; and (4) in spite of the existence of a circulatory system the nephridia still open by bell-shaped ciliated mouths directly into the cœlomic cavity.

To take the last first, it might be urged that the organism did not as yet depend upon the circulation entirely for the conveyance of metabolic products to the cells of the nephridial tubules, and that, even if it did, the funnels had not had time to degenerate; to which my reply is that tubules in direct communication with the exterior open by funnel-shaped mouths into the cœloms of the various orders right up to and including vertebrates, even the aminota, and this in spite of a continually improved and elaborated circulatory system. The obvious reason is that the cœlomic fluid contains material which is better conveyed directly to the purifying cells of the nephridial tubules than through the systemic circulation. In the case of the earthworm it might still be true that a large part of the products of metabolism is thrown directly into the cœlom and then extracted by the nephridia, but even a cursory examination of the higher orders would show that in their case this could scarcely be. The poison which contaminates the cœlomic fluid is not the result of metabolism, but of bacteria which have permeated the intestinal wall; the cilia of the funnels guide this fluid down the tubule; the water, or part of it, now purified, is reabsorbed by the cells of the tubules into the general circulation, so that the cœlomic fluid is cleaned of its poisons without risk to the body tissues. The earthworm has a partiality for what the gardener calls "fat stuff"—i.e., material teeming with bacteria of all kinds and grades of virulence—passing immense quantities of it through its alimentary tract in the course of its lifetime. I would have you believe that the single layer of ciliated epithelium and a few layers of chloragogen cells are not the only defence against the entrance of these hordes of bacteria into the body tissues. If they were, no earthworm would survive a day, and the result to the community would be appalling. Darwin has pointed out that these animals are an important agent in the formation of mould; I venture to add, in its purification also. On the contrary, they pass in their myriads, some killed, some maimed in the struggle with the first line of defence, into the cœlomic cavity, where they are effectually dealt with by the amœboid cells and the bactericidal fluid of the cœlom. The particulate relics of both sides are swept out through the dorsal pore, not down the nephridial tube, the mouth of which is guarded by cilia which prevent the blocking up by such particles of the delicate slender tubule. The cœlomic fluid is purified in the way I mentioned above. This, I think, explains the large size of the cœlomic cavity in these scavengers, and the presence of the dorsal pore behind the pharyngeal segments, which, owing to the fact that there is no absorption by the thick-walled pharynx, and therefore no stagnation of foodstuff, would not require one. And herein lies the keynote of my theory. Around that portion of the alimentary tract where foodstuff containing bacteria is *stagnated* for the purpose of *absorption*, nature has developed a fluid-containing cavity designed for

[1] Paper founded upon the introduction to a discussion before the Medical Society of London, May 19th, 1913.

the reception and destruction of micro-organisms which thus find an opportunity to permeate its wall, with an apparatus for its own purification so arranged that its poisonous excretions shall not contaminate the systemic tissues. This is true of the whole range of animal life, including the highest vertebrate, man, in whom this perienteric trap, so far from degenerating, has become more complicated, yet not less efficient, than that of the earthworm. The machinery for its purification is less obvious, perhaps, only because it has been less studied.

The progressive adaptability to its environment evolved in the animal has necessitated, or at least has been accompanied by, a complex evolution of the cœlom as well. Its channels of excretion, direct and obvious in the lower animals, have become indirect and obscure in the higher series. The nephridia, the pronephric and mesonephric tubules gradually disappear and give place to other more elaborate and more complicated channels which, however, conform to the primitive and invariable rule that they excrete the cœlomic toxins without risk to the tissues of the somatopleure. The anatomical disposition of these will require time, patience, and ingenuity to unravel, to such an extent has Nature clouded their outlines in her desire to have many functions performed by one organ. In the amphioxus we see excretion carried out, on the one hand by the primitive method of tubules, on the other through a specialised portion of the body wall. Much as I should like to have done so, I do not intend on this occasion to trace the gradual evolution of these indirect channels through the rest of the vertebrate series except to hint that the original function of the air bladder of fishes was not concerned with hydrostatics; that the lungs of amphibia and the air sacs of sauropsida subserve another and older purpose than that of respiration, and that when the diaphragm shut out the lungs from the mammalian cœlom the omentum was already in an advanced state of development; it only remained to detach its veins from the hepatic and connect them with the portal. To this day the human lung has not forgotten its most primitive function of excretion, as witness pneumonia, the bronchitis of typhoid and of gastro-enteritis, but it is now subsidiary to the omentum, *par excellence* the police and sanitary officer of the human cœlom. The human alimentary canal is constantly infected with millions of pathogenic and other bacteria. Let us follow the wanderings of an army of staphylococci which has been swallowed from, say, a suppurating antrum. For the present we will leave out of count the fact that one army follows another in rapid succession. Theoretically this army should be destroyed by the hydrochloric acid of the gastric juice, practically we know that not to be the case, otherwise no one would ever suffer from typhoid, cholera, &c., and so it arrives in fairly good and close order in the small intestine. The valvulæ conniventes by delaying the flow of foodstuff along the canal aid in its absorption; but what excellent lurking places the recesses of their folds afford the regiments of this hostile army! The single files of columnar epithelial cells lining these trenches, however well trained, are no match in defence against the determined onslaught of clumps of poison-forming bacteria. In the lymphoid tissue of the mucous membrane the situation becomes more critical. The leucocytes make short work of the "laggards" and "camp followers"; they drive the enemy's unassailable "squares" or clumps on to the wire entanglements of the muscularis mucosæ and so break them up, finding in the process fresh opportunities for cutting off detachments.

The close-meshed net of the circular and longitudinal muscle fibres causes a further breaking up, thinning, and spreading out of the bacterial clumps, so also does the supporting tissue of the cœlomic epithelium. The bacteria are thus scattered in small and solitary groups over an extensive area by the time they arrive to give battle to their arch enemy the cells of the visceral peritoneum, trained by the inherited instincts of æons in this particular kind of warfare. Should they survive this, there still remain the serried ranks of leucocytes and the endothelial cells of the omentum, which, to change the metaphor, lies like a huge lazy parasite dining off a constant meal of organisms dutifully brought to it by the vermicular movements of the intestines. For an illustration of this process note the spread of small tubercles in the subserous tissue around a tuberculous ulcer of the intestine. Dr. Hale White says: "It is remarkable that tuberculous peritonitis is so rare in comparison to the frequency with which subperitoneal tubercles are found underneath tuberculous ulcers of the intestine." We know, too, how rare is peritonitis in comparison to the frequency with which we see quite extensive areas of the muscular coat denuded by ulceration of its first and second lines of defence, the mucous membrane. The secret lies in the defensive powers of the visceral endothelium and the omentum.

Of the omentum I may say here that this organ, or more correctly, part of an organ, has not even yet received its due meed of credit for the vitally important function it *constantly* performs on behalf of the mammalian community of cells. It is true that we have advanced since the days when we looked upon it as a mere storehouse for fat or as the abdominal hot-water bottle. We know it absorbs fluid and solid particles, encapsulates necrotic tissue, localises purulent collections, &c.

Mr. Wilkie has shown in some interesting experiments how it will "prevent emigration of bacteria from devitalised bowel." But, as Schieffendecker remarks, "there exists no special organ for pathological processes," and if the omentum depended on occasional accidents of the above kind to keep it in training its powers would be lost in the course of a generation or two. Its large blood and lymph supply, equal almost to those of the intestines and subject to the same reflex dilatation after meals, its large standing armies of phagocytes, its evolution since the days of its first appearance in the lower vertebrates, convince me that the "emergency" it is called upon to meet is a continuous one, but that its nature is not always equally critical, whilst its source is suggested by the anatomical relationship of omentum and small intestine.

It may be asked why the bacteria, during their passage through the bowel wall, do not enter the portal blood and lymph capillaries, and by these means the general circulation. Now the region in which they are most likely to do so is the mucous tissue, with its rich capillary network and large conspicuous lacteals. Their entrance into the lymph vessel is prevented by the fact that here, unlike any other region of the body, the lymph capillary or lacteal does not begin in an irregular open space, on first view the more expeditious arrangement for the absorption of fat globules, but has a club-shaped end closed in by cells which allow the entry of leucocytes bearing fat globules, but have the power of excluding undesirable passengers. The endothelium of the blood capillary has a similar property of selection and exclusion. But this region is policed by a dense force of leucocytes.

I take it that the immense numbers of phagocytes present on the hypoblastic portion of the gills of fishes are there, not for the purpose of devouring organisms escaping from the blood capillary, but rather of defending the delicate thin-walled vessel, which here forms part of the systemic circulation, from attack and invasion by noxious organisms in the gill stream. In this case virulence of the organism does not matter, for the phagocytes are constantly shedding themselves and their foe into the water current. In the lymphoid tissue of the intestine virulence of the invader does count, and though the leucocytes shrink from engorging the most noxious of them they at least dispute their passage into the lacteal and blood capillary, render any prolonged stay in this region undesirable, and so tend to drive the intruders either back again into the intestine or into the far more fatal trap farther in, the cœlom.

In suppurative diseases of the appendix or peritoneum how very rarely do we find suppuration of the glands draining the affected area; how rarely, indeed, do we find them even enlarged. What a rare disease is pylephlebitis when one considers the opportunities. But in spite of all this micro-organisms do manage to gain entrance into the blood and lymph capillaries. The latter, on account of their size, are more likely to be invaded than the former. They are still liable to be picked out again by the endothelial cells, and any which escape meet their fate, in the latter case in the mesenteric glands, in the former in the liver, where they are arrested by the pseudopodia of the liver cells forming the wall of the portal capillary.

Now we have to consider the methods by which the peritoneal "shambles" are cleared of the bacterial carcasses and their ante-mortem- and endo-toxins without risk to the body tissues. At times of small or normal stress—i.e., when no

"symptoms" are produced—the dead bacteria are either (1) entirely digested by the phagocytes of the omentum; (2) conveyed by them (*a*) back into the intestinal lumen or (*b*) into the mesenteric glands by the lymph channels; (*c*) to the liver by the intestinal and omental blood-vessels, where they are arrested by the liver cells and cast out into the bile. The contaminated lymph of the cavity is absorbed by the visceral endothelium back into the lymph spaces of the intestinal wall and omentum, whence it is either (*a*) extracted by Lieberkühn's glands into the intestine, or (*b*) absorbed by intestinal and omental veins and extracted, perhaps chemically altered, by the liver cells, and excreted in the bile which passes down the intestine and acts possibly as an antitoxin to that particular variety of bacterium.

How often has it happened that a surgeon when operating for a totally different abdominal condition has found miliary tuberculosis of the peritoneum which has given rise to no symptoms. Twice has this experience befallen me—one a case of ventral hernia and the other of inguinal hernia. Both, curiously, were women. They refused my advice to take a prolonged rest in the open air, and three weeks after the operation went back to their housework. Neither has had a day's illness since. Had it not been for the accident of operation this incident in the patients' histories would never have been known, for the normal machinery was equal to the demand.

I would also allude here to the thousands of abdominal cases which in the pre-antiseptic and even the pre-glove days emerged successfully from a surgical operation with suppuration limited to the abdominal wall. The peritoneum had done its work silently and effectively. Lane's constipation bands are not evolution bands, but the scars of silent battles. Not content with this elaborate excretory machinery the portal blood and the blood which has received the outflow of the thoracic duct is conveyed over an immense purifying surface in the alveoli of the lungs before it is considered sufficiently pure to supply the body tissues. Our experience of the expiratory exhalations of certain of our friends proves this to be no superfluous precaution. Now let us take a case in which the stress upon the peritoneal organ was so great that the usual machinery I have just described, unless assisted, is not equal to the task imposed upon it.

Nature is still far from the end of her resources, but from the very fact that the machinery she falls back upon is not constantly in use, symptoms and physical signs are produced. These, so far from impressing us that physiology is "disordered" (Barnard), should serve to demonstrate to us her "extraordinary" methods of reaction to an extraordinary injury.

The symptoms and physical signs of acute miliary tuberculosis which has been caused by the rupture of a small diseased mesenteric gland or of a tuberculous focus in a Fallopian tube will first be considered in detail, with a view to discovering clues to reserve methods of defence relied upon by the peritoneum in times of crisis. To begin with, the invasion is not by permeation, but by a sudden, almost overwhelming flood of bacilli and their toxins. The overdose is thinned and spread out as rapidly as possible beneath the omentum by the quickened vermicular and peristaltic movements of the intestines. These, together with the action of the tubercle toxins upon the exquisitely sensitive parietal peritoneal cells, give rise to anything between vague abdominal discomfort and acute pain, according to the degree of toxicity of the intraperitoneal fluid and the vigour of the contractions. To dilute this toxicity and to aid in killing the bacilli, a large quantity of serum is secreted, and absorption by the visceral endothelium is checked as much as possible, hence there is ascites. But some of the toxin escapes into the general system and causes a rise of temperature, rapid pulse, and respiration. The rapid pulse is turned to good purpose by reflex stimuli from the peritoneum to produce splanchnic arterial hyperæmia. This arterial hyperæmia would result in the hurrying of toxins through the portal vessels into the hepatic veins were it not counteracted by a delayed flow in the portal system. I need not point out all the advantages to be obtained by this "Bier's treatment" on a large scale. It gives the intestine a congested appearance, but it aids greatly the secretion of serum, delays absorption, and gives time for the liver cells to extract those toxins and bacilli which are being conveyed by the portal blood.

All movements of the abdominal wall and the diaphragm would tend to squeeze the septic peritoneal contents into the lymph and blood capillaries, and to hurry their circulation through the portal vein and larger lymph vessels. To minimise this the abdominal wall is made rigid, and the respiratory excursions of the diaphragm lessened in their extent. Peristaltic contraction of the intestinal muscular coat would also tend to have the same effect, so the muscles are inhibited, not paralysed, hence the constipation. I agree with Mr. Peter Daniel when he says that sepsis leads to stasis; we differ, I think, only in our suggestion as to the steps of the process. The delayed circulation in the portal tributaries carries with it the disadvantage that the blood becomes over-venous, so the intestine, *pro tem.*, is converted into a respiratory chamber for the CO_2 and other waste products; hence, there is tympanites. The intestinal epithelium is here only reverting to its ancient function—e.g., in cœlenterates. Were it not for this temporary relief the vitality of the bowel would be very seriously and rapidly interfered with. In these circumstances, it can be imagined that the intestinal route for the excretions of toxins from the peritoneal cavity would not be a very efficient one, so another has to be found. The peritoneum of the stomach now takes on the duty, and the peptic glands do the work normally done by Lieberkühn's glands. The bowel being inhibited, another duct to the exterior must be made use of. The stomach is filled not only with the excretions of its own glands, but also with the increased excretions of the liver cells conveyed to it by the second and first parts of the duodenum. The vomiting centre in the medulla, either reflexly stimulated from the peritoneal cavity or centrally by the poisoned systemic blood, ensures a periodic expulsion of its noxious contents, hence the vomiting of large quantities of fluid. The colour of the vomited matter will depend upon the efforts which the liver cells have to make to meet the difficulties of the case. If the stress is small the hepatic centre in the medulla, which regulates the metabolic activity of the liver cells (the glycogenic centre), whether reflexly or centrally stimulated, goads these cells to a corresponding effort only; the vomit therefore after the expulsion of food will contain light yellow bile and much mucus; under greater stress light green bile, with a more watery acid secretion from the peptic glands, and so on, until in virulent septic cases, such as peritonitis from a perforated gangrenous appendix, we see it gradually change to sage green (acid), to black, and so-called "fæcal" (alkaline towards the end). Also, what is equally important, the combined output of the liver and stomach increases with the urgency of the case, so that the last vomits are invariably copious. In order to provide the necessary fluid for the peritoneal "wash out" the other secretions are reduced, the tongue becomes dry, and the amount of urine decreased. Such, then, are some of the resources of which Nature avails herself in a peritoneal emergency. If the dose is not too large with the aid of this extra help the crisis passes, the leucocytes having in the meantime shut up the bacteria in tubercles. The ascitic fluid is drained away by diarrhœa. The excretory function of the stomach gives place to a purely secretory, so the appetite returns and the tongue cleans, the temperature and pulse become lower, and the balance of health generally is once more restored. An abdominal incision expedites matters considerably.

Now compare this picture which I have drawn of acute tuberculous peritonitis with a more toxic and septic form, due, say, to virulent organisms permeating through the wall of an inwardly directed appendix. So great is their virulence that in their passage they are actually causing necrosis of the tissues of the appendicular wall. The crisis being more urgent, the exertions of the peritoneum become correspondingly strenuous. The pain is usually more severe; the rigidity is more marked; the breathing is shallower but more frequent. The bowel is more congested; in bad cases the flow of the portal blood may be so delayed that the bowel is almost black near the seat of the original poison factory, fading off, the further you get from it, to a purple and dull red. Relief from the CO_2, &c., is more necessary than ever, hence the very marked distension, which in turn should be more pronounced near the poison factory and lessen the further you proceed from it. (This is true in practice, for increasing distension of the intestine, if followed, will lead to the focus of disease, whether that is a seat of obstruction

or inflammation or the exact opposite, the site of a perforation!) The vomiting is incessant and runs more quickly through the gamut of colours from yellow to dark green and brown. Its amount during the 24 hours may seem incredible. Treves mentions a case of one and a half gallons. I saw an even greater amount in a case of pneumococcal peritonitis associated with double pneumonia. To provide the fluid for this peritoneal "wash out" through the liver and stomach the peripheral arteries are constricted, hence the small hard and wiry pulse; the other body secretions are lessened, speech becomes thick, and the dry tongue is rolled about the mouth and between the lips from time to time. The secretion of urine is reduced to a minimum; in severe cases of vomiting it may even be suppressed, the vigorous work of the hepatic and peptic cells rendering any excretion by the renal cells unnecessary. Some of the lymph of the tissues is commandeered for the same service, hence the pinched and drawn appearance of the face and the concentrated condition of the blood. When this supply threatens to fail, or perhaps before, the body fat is broken up into water and carbon dioxide. There is a large supply of this ready at hand in the abdomen, in the subperitoneal and retroperitoneal tissues, the omentum, and the appendices epiploicæ. One pound of fat yields a little more than a pint of water when completely oxidised. In very toxic cases the wasting is very rapid, the fingers and hands look gaunt and thin, the eyes fall back in their sockets. The carbon dioxide accumulates in the blood, giving it the appearance almost of tar, increasing the frequency of the respirations, setting the alæ nasi to work, colouring the lips a livid purple and the countenance an ashen grey.

With the whole body engaged in a death-grapple with a determined enemy, every nerve fibre occupied in transmitting calls from the hard-pressed peritoneum to the other organs for some help in this desperate struggle, with the higher cerebral centres subconsciously aware that the most vital medullary centres, the cardiac, respiratory, vomiting, and hepatic, are working at their highest pressure, it is not to be wondered at that the patient has an "anxious look," is restless and sleepless.

You can abolish most of the above complicated reflex reactions with a good dose of morphia, but *not*—and there's the rub—the stimulus which produced them. To quote Battle and Corner: "Morphia can convert a livid vomiting and distressed patient with rapid pulse and respirations into a very comfortable patient with a slow pulse, slow respirations, moist skin, moving abdominal wall, painless and not necessarily contracted abdomen." To add another from Treves's "Intestinal Obstruction": "The amount of urine if lessened increases; the vomiting becomes less troublesome or ceases for a while; stercoraceous vomiting even may cease and on the reappearance of the symptom the ejected matter may be non-fæculent."

The *raison d'être* of the elaborate network of nerve fibres governing the viscera contained in the peritoneum is not far to seek; the direct connexion of the liver, stomach, and higher reaches of the peritoneum with the medulla suggests that in importance they are on a par with the heart and lungs. Surgeons have long ago learnt that to put this beautifully designed and intricate gear out of action with a dose of morphia is not a wise proceeding in cases where the peritoneal sac is infected, though we still read of the most persevering attempts to control the vomiting with other drugs, happily without any success hitherto.

I have already said that the colour, reaction, and amount of the vomit depend upon the degree of toxicity of the fluid in the peritoneal cavity; they are, therefore, reliable data not only in the diagnosis but still more in the prognosis of pathological conditions within the abdomen.

With the progressive poisoning of the peritoneal cavity causing increased demand upon the excretory powers of the liver and stomach, the latter in turn cause a reflex dilatation of the stomach to receive their combined effusions, thus adding considerably to the discomfort from an already distended abdomen. The gradual filling of the stomach is accompanied by vague epigastric pain, nausea, belching, and great mental depression, and in some cases it was possible to foretell the imminence of a large stinking vomit by the patient's livid face becoming an even duskier due. Haguenot's and Brinton's mechanical theories of the production of fæcal vomiting are open to so many insuperable objections as to make them, in my opinion, no longer tenable.

An infected peritoneum does not always cleanse itself *viâ* the stomach; sometimes the intestinal route is made use of, as in puerperal fever or pneumococcal peritonitis, or they may be used alternately, diarrhœa at one time predominating, at another the vomiting; or, again, as in very virulent infections, both channels may be used to the utmost at the same time, as in Asiatic cholera. I am aware that the accepted view of "the excessive excretion of fluid into the intestine" in this disease is that it "is due to the paralysis of the splanchnic nerves by a toxin formed by the cholera vibrio in the intestine." My suggestion is that the toxin formation takes place in the peritoneum and that the excessive secretions are meant to get rid of it, and the fact that pathologists remark upon the condition of the peritoneum "sticky" (Osler, Wilks, and Moxon), "has a soapy feel" (Cohnheim), lends it some support.

The most frightful instance of post-operative peritoneal sepsis that I ever saw died in four days with choleraic symptoms. I even go so far as to suggest that the symptoms of typhoid fever are due to the infection of the peritoneal cavity by the B. typhosi, the sloughing Peyer's patches being marks of their disputed but victorious passage. Once these barriers were ravaged and passed, I utterly fail to see what could possibly hinder this motile bacillus from entering the peritoneal cavity. A boy's bilious attack is due to peritoneal infection, also the summer diarrhœa of children. Some of the cases of "vicious circle" after gastro-jejunostomy are instances of septic peritonitis. Some of the failures of gastro-jejunostomy are due to the fact that the operation has been performed, not on account of organic pyloric obstruction or gastric or duodenal ulceration, but in cases of chronic infection of the peritoneal cavity, the source of which was not found; the poison therefore continuing, the liver and stomach continued their necessary work of excretion. The abdominal incision and manipulation of the viscera, by temporarily draining the peritoneum and causing a fresh sharp effusion of serum, ensured them a short respite.

The liver and stomach by no means escape themselves scot free in the performance of these vital duties. In cases of acute infection the liver cells, especially those in the outer part of the lobule, on which the greatest stress would fall, show fatty degeneration; in the more chronic forms they die out entirely, and their place is taken by fibrous tissue. Again, the muscular coats of the stomach, constantly bathed in toxic lymph passed into it by the visceral endothelium, would gradually become atonic, causing a chronic dilatation of the organ; sometimes this lymph would actually contain organisms which the peritoneum and omentum had imperfectly dealt with, and these again, during the time that they found themselves in the submucous tissue, would produce necrosis, and begin the mischief of ulceration. In cases of still greater stress upon the peritoneum, as in some cases of puerperal fever, ruptured gangrenous gall-bladder, &c., the organisms set up a general condition of acute phlegmonous gastritis.

The symptoms of "acute intestinal obstruction," as given in the text-books, are not symptoms of obstruction at all. The only symptoms of "obstruction" are paroxysms of acute colicky pain, due to forcible peristalsis, combined with the few reflexes which such a non-toxic stimulus would temporarily produce, and which I need not mention here, except to say that they would be equally characteristic of the passage of a gall-stone, renal calculus, &c. The other symptoms are due, not to the obstruction, but to the supervening poisoning of the peritoneal cavity by organisms now permeating in excessive numbers through bowel wall, the vitality of which had been depressed. Such depression would be produced not only behind a growth or other obstruction, but by interference with its blood-supply, such as embolism of a mesenteric artery, thrombosis of a mesenteric vein, and aneurysms of the abdominal aorta, from injuries to the abdomen, such as blows, run over, &c. Excessive permeation might conceivably take place from the presence of excessive numbers within the bowel, even without any alteration in its wall, and it is not an uncommon experience to have a case die with the symptoms of acute intestinal obstruction where *nothing* can be found post mortem.

My labour will not have been in vain if it causes you to look upon the peritoneum with more questioning eyes. Before venturing to address so learned a society I had fortified myself with a passage from Henle: "It is an important fact that in the whole extent of this matter there is scarcely an opinion which is not founded on experience

and again contradicted by experience. In these circumstances one might advise theory to wait until experience is riper, but I rather think that experience in order to ripen needs the light of a reasonable theory: for Nature only answers when she is asked a question, or more truly she speaks to us constantly and with a thousand tongues, but it is only the answer to our question we hear."

Cheltenham.

THE EXPERIMENTAL TRANSMISSION OF DISSEMINATED SCLEROSIS TO RABBITS.

BY W. E. BULLOCK, M.D. EDIN., B.SC. LOND.,

FORMERLY MCCUNN SCHOLAR AND ASSISTANT TO THE PROFESSOR OF PATHOLOGY, UNIVERSITY OF EDINBURGH; ASSISTANT, IMPERIAL CANCER RESEARCH FUND, LONDON.

THE naked-eye and microscopic anatomy of the lesions found in multiple sclerosis have been studied with great care by many histologists, and especially by Dr. James Dawson; but so far as I am aware there are no recorded experimental investigations on the etiology of the disease. It is beside the purpose of this short article to analyse the cause of this, though it may be suggested that it is partly due to the more or less general belief that the disease is due to some inherent defect of the nervous system (Strümpel, Ed. Müller). Among many other factors believed to be effective in the causation of the disease one may mention syphilis (Cotala, Perrin-Parisot), the various acute infectious diseases (Marie), chronic poisoning with metals or carbon dioxide (Oppenheim), the puerperium (Balient), and trauma (Mendel). The experiments to be described below afford some evidence that the disease is due either to an infection by an ultramicroscopic organism or to a poison which may be found in the cerebro-spinal fluid.

One of the chief difficulties which beset any experimental investigation into the cause of disseminated sclerosis is the fact that it is impossible to obtain freshly attacked nervous tissue. Owing to the chronicity of the disease one may assume that the amount of virus remaining in the central nervous system at the time of death is exceedingly small. There remains, however, the possibility of withdrawing cerebro-spinal fluid by lumbar puncture during life and inoculating this into animals, as well as the general method of testing the toxicity of the blood, urine, and the Berkefeld filtered water-soluble constituents of the fæces. The first two of these methods were employed in the manner described below.

The cerebro-spinal fluid was obtained from a patient aged 19, a domestic servant, who was under the care of Dr. J. J. Graham Brown in the Royal Infirmary, Edinburgh. At the time the first specimen of the fluid was withdrawn the patient exhibited all the classical signs and symptoms of the disease. She was unable to stand owing to spastic paralysis; her speech was staccato; muscular coördination was defective and nystagmas was marked. She suffered from paralysis of the right external rectus ocular muscle and a right-sided facial paralysis. Optic atrophy was present in both eyes. She complained of cramps and pains in the arms and legs. Increased knee-jerks and Babinski's sign were present.

The fluid obtained was placed in an ice chamber within five minutes of its withdrawal and kept there for 24 hours. Part of it was then injected into a tame rabbit and a cat.

In the case of the rabbit 2 c.c. were injected subcutaneously in the line of the left sciatic nerve, whilst the cat received 2 c.c. intradurally in the thoracic region, the dura being exposed under ether anæsthesia. Tubes of broth, agar, glucose agar, blood agar, and gelatin were inoculated from the remainder of the fluid, which was then replaced in the ice chamber. The culture media showed no growth after 10 days' incubation.

After the injections the animals were isolated from laboratory stock and well tended. Apart from a slight conjunctivitis the cat remained in perfect health for nine weeks, and nothing more need be said concerning the animal.

The rabbit remained in good health for 12 days, but on the thirteenth day developed within 12 hours complete paralysis of the hind limbs. On the fourteenth day the animal was much worse and suffered from incontinence of fæces and urine, the urine containing blood, bladder epithelium, and a variety of micro-organisms. The temperature of the animal was 99° F. On the sixteenth day the animal was completely paralysed in all four limbs, and appeared to be dying. It was therefore killed, and after withdrawing 6 c.c. of sterile heart's blood the whole of its central nervous system, the sciatic nerves, bladder, kidneys, suprarenal bodies, and lungs were removed and preserved in 4 per cent. formalin. There were no signs of inflammation at the site of inoculation.

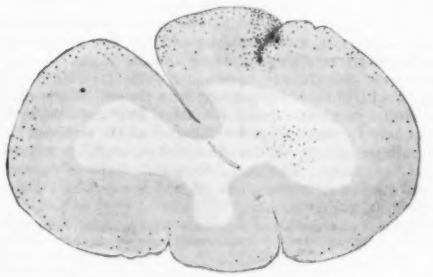
The sterile heart's blood—proved to be sterile by culture tests—was injected into a young white Andalusian rabbit. The animal remained in good health for eight weeks.

The results of the examination of the organs and tissues of the paralysed rabbit were as follows. The lungs, kidneys, and suprarenal bodies were healthy. The bladder showed a marked cystitis, due probably to an ascending infection. The sciatic nerves were healthy; the spinal cord as a whole was swollen and exhibited in the grey matter of the lumbar and cervical regions naked eye areas of congestion. Frozen sections were made and stained with osmic acid; fragmentation of the myelin sheath in the white matter of the cervical and lumbar regions and in several parts of the dorsal region, together with a swollen appearance of the nerve cells, was observed. Marchi preparations showed no areas of blackened fibres. In sections stained with picro-fuchsin congestion of the membranes was conspicuous.

FIG. 1.

Transverse section of spinal cord of paralysed rabbit, stained by Marchi's method, showing diffuse distribution of degenerated nerve fibres as black dots.

FIG. 2.



Oblique section of spinal cord of the same animal as Fig. 1, stained by Marchi's method, showing a localised area of degeneration.

FIG. 3.

Transverse section of spinal cord of the same animal as in previous figures, stained by Weigert-Pal method, showing very extensive degeneration (pale areas of white matter).

The success which attended this first inoculation of cerebro-spinal fluid led me to use up the fluid which had

stood in the ice-chest for 14 days in inoculation of three more tame rabbits.

The animals employed were: (1) a young white rabbit; (2) a half-grown brown and white animal; and (3) a young black and white animal. Of the first little need be said; on the thirteenth day after inoculation its left hind limb was broken accidentally and the animal had to be killed. The second rabbit remained healthy and active for nine weeks after the inoculation. The third became paralysed in the hind limbs on the twenty-first day; the paralysis was more marked on the left side than on the right and was never so severe as in the first rabbit already described; it did not extend to the fore-limbs, and in seven days had completely disappeared. Three weeks later the animal was reinoculated subcutaneously with fresh cerebro-spinal fluid from the same patient, and up to the present (five weeks afterwards) there has been no sign of paralysis.

A fresh supply of cerebro-spinal fluid from the same case was obtained and divided into two equal portions, one of which was filtered through unglazed porcelain.

The filtered and unfiltered lots—each 1·5 c.c.—were injected subcutaneously into two tame rabbits. The temperature of the animals was taken twice daily and was found to vary between 97° and 101° F.; the animals maintained their weights and general health for 20 days. On the twenty-first day the rabbit which had received the filtered fluid became paralysed, and on the twenty-second day the second animal became paralysed in the left hind limb. This latter animal recovered completely in four days and remained active and healthy for 37 days, when it again became slightly paralysed in the hind limbs. It again rapidly recovered and has remained healthy.

The first animal inoculated with filtered fluid became progressively worse until all four limbs were involved and locomotion became impossible. From this condition the rabbit gradually recovered, until six weeks later it could move with a spastic laborious gait. At this period it was decided to kill the animal with chloroform, and to inject a portion of sterile emulsion of spinal cord into another healthy rabbit, the remainder of the central nervous system being preserved in formalin. The animal into which infected spinal cord emulsion was injected died in seven days, and thus rendered the experiment nugatory.

Histological examination of the remainder of the cord by Weigert-Pal and Marchi methods revealed great areas of degeneration throughout the cord, and especially in the lumbar and cervical enlargements. The brain was practically unaffected. The figures given on the previous page illustrate the type and extent of degeneration commonly found in the region from which the original section was cut.

The toxicity of the blood of the same patient was tested by injecting 5 c.c. into a healthy rabbit. The animal showed no signs of paralysis during the following eight weeks.

At about this time it became possible to obtain cerebro-spinal fluid from another patient who presented the classical signs and symptoms of the disease. This patient, aged 20, also a domestic servant, under the care of Dr. Graham Brown, had suffered about six months before seeking aid in the Royal Infirmary. The cerebro-spinal fluid obtained was divided into two portions, one of which was filtered through the Berkefeld filter.

The filtered and unfiltered lots were now injected subcutaneously into four young wild rabbits which were then separated and carefully looked after. The animals, however, did not thrive; one died in 10 days, a second in 14 days, a third in 21 days, and the fourth in 26 days. None of them showed any signs of paralysis.

A further series of experiments have been conducted, but it is not yet possible to detail the results. The problem of transferring the disease from rabbit to rabbit is being attacked, as well as the many other problems which have arisen during the course of the work.

Summary.—It has been found possible to produce paralysis of the limbs in four rabbits out of five by injecting cerebro-spinal fluid, withdrawn under rigidly aseptic conditions from a case of disseminated sclerosis, subcutaneously into rabbits. The fluid was found to be potent after exposure to a temperature of 0° C. for 14 days, and after being filtered through unglazed porcelain. Histological examination of the spinal cord reveals a complete reproduction of the appearances found in the human subject—viz.: (1) vascular engorgement and fragmentation of the myelin sheath in the early stages; (2) areas of degeneration throughout the cord, demonstrable by the Marchi and Weigert-Pal methods, in the later stages of the disease. Whether the cerebro-spinal fluid obtained from a second case of the disease would have produced paralysis in two wild rabbits or not could not be determined owing to the premature death; in the case of the other two animals the fluid was not potent in producing paralysis. A cat which was inoculated with fluid obtained from the first case remained active and healthy for nine weeks.

Conclusions.—If one assumes that disseminated sclerosis is a definite entity and that the first patient from whom cerebro-spinal fluid was obtained was an instance of the disease one is bound to conclude that the cause of the disease is either a filtrable virus (organism) or a water-soluble poison found in the cerebro-spinal fluid. Whilst the final demonstration of the first conclusion is not yet obtained the balance of probability lies in its favour. Thus the fact that paralysis occurs from 14 to 22 days after inoculation is fairly strong evidence against a non-living poison. Against all this, however, must be placed the possibility that the disease which we call disseminated sclerosis is not individual, but that it may be a symptom-complex which may be produced by two or more causes. The fact that the cerebro-spinal fluid obtained from the second case failed to cause paralysis in four wild rabbits lends some support to this possibility. One must, however, attach some importance to the fact that wild rabbits were used in these experiments, whereas tame ones were employed in the first.

In conclusion, I should like to thank Dr. Graham Brown, P.R.C.P. Edin., for his kindness in placing the material in his wards at my disposal; Professor Lorrain Smith for his interest in the work; and Dr. Alban Andrews for his willing help in procuring aseptic cerebro-spinal fluid.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

FURTHER NOTES ON "POST-ANÆSTHETIC" VOMITING.

BY J. D. MORTIMER, M.B. LOND., F.R.C.S. ENG.,
ANÆSTHETIST, ROYAL WATERLOO HOSPITAL, ST. PETER'S HOSPITAL FOR STONE, ETC.

SINCE the publication of my article on this subject in THE LANCET of June 17th, 1911, I have noted the after-condition, especially with regard to sickness, of 719 patients. As before, short administrations of nitrous oxide or ethyl chloride have been excluded, but otherwise no selection has been made. The results correspond with those of the previous series as regards absent, slight, and moderate vomiting; but there were only a few (8) in whom it was continued or severe, the probable or obvious causes of excess in them being similar to those in the cases described in the previous article. This makes a total of upwards of 1000 cases, in about three-fifths of which (including many long administrations) there was no after-sickness, and it was inconsiderable in the majority of the rest.

After 110 administrations lasting an hour or more, vomiting was absent in 38, slight in 44, moderate or considerable in 28. Amongst these there were only 12 operations not involving viscera, and it was absent (9) or slight (2) in all but one case, showing that time alone is not such an important factor as is usually supposed. It may be said that increased liability to sickness after a long operation on internal organs is due to the greater depth of anæsthesia. Before such operations, however, a preliminary injection of some narcotic is now usually given, and little, if any more anæsthetic is needed than for operations elsewhere. Sickness seems to me to depend much more on the organ involved. Thus, after 45 operations on the kidney vomiting was considerable in half the cases, whereas after 26 hysterectomies (similar as regard time and depth of anæsthesia) it was absent or slight in all but four. Flatulence, nausea, and sometimes hiccough are comparatively common after renal operations. In one case they occurred when the kidney had only been felt *in situ*, not wounded.

I suggest that such after-effects may be to some extent explained by inhibition of the rhythmic action of the diaphragm favouring atonic distension. Dr. William Pasteur has shown that such inhibition is commonly associated with pulmonary disorders following operations in its region.[1]

As regards the value, from this point of view, of previous injection of narcotics—such as morphine and atropine—I think that they only lessen that vomiting which would be associated with spasmodic after-pain or with emotional disturbances, but rather tend to increase it when due to other causes.

These results sustain my previous conclusions that (1) sickness by no means necessarily follows the administration of an anæsthetic, and should not occur to any serious

[1] Oration before the Medical Society of London, THE LANCET, May 20th, 1911, p. 1329.

degree unless there are special conditions (considered in the former article) which influence its effect or independently are responsible for the disaster; (2) that severity of vomiting is not, as usually held, proportionate to a great extent to the mere length of administration; and (3) that when it occurs careful investigation should be made as to its causation, and the treatment directed accordingly.

St. Leonard's-terrace, S.W.

A NOTE ON THE TUBERCULIN REACTION.

BY EDWARD E. PREST, M.A., M.D. CANTAB.,
MEDICAL SUPERINTENDENT OF THE AYRSHIRE SANATORIUM.

AFTER reading with great interest Lydia Rabinowitsch-Kempner's paper on the Nature of Tuberculin, &c., which she read at the meeting of the National Association for the Prevention of Consumption in August last, it occurred to me that some of her experiments on tuberculous guinea-pigs possibly threw considerable light upon some features of one kind of tuberculin reaction, and upon whatever good results may follow upon the injection of tuberculin into febrile patients. She points out that after injections of tuberculin (probably somewhat excessive doses) into tuberculous guinea-pigs tubercle bacilli may be demonstrated in the blood. It might be inferred from this that nothing but harm could follow such a result, but I am by no means certain that such is necessarily the case. These experiments would, however, seem to vindicate Virchow's contention that tuberculin might cause mobilisation of the bacilli.

It is interesting to note that Karl Spengler has stated that the main seats of production and accumulation of immune substances are the red blood cells and not the serum. He has stated that the immune substances in the blood cells are often present in quantities a million times greater than in the corresponding serum. It may, therefore, follow that living bacilli circulating in the blood stream, which under certain conditions become lysed, may accomplish, owing to their intimate mixture with the red blood cells, what toxins acting on ordinary tissues are unable to do, and bring about an end of the disease in some cases and in others produce improvement. I think this probably occurs in those cases where after an injection of tuberculin there is a rapid rise of temperature out of proportion to the increase of physical signs, accompanied by the most profound symptoms of intoxication, sometimes, indeed, producing delirium; after the subsidence of these symptoms, the temperature having rapidly fallen, the patient is very much improved and, indeed, may be practically cured.

A case which bears upon this subject came to my notice recently—that of a patient who had left the Ayrshire Sanatorium over two years since and had been lost sight of, and who at the end of this period came back to see me. He had originally left the sanatorium at the end of three months, being unable to remain for the usual five months. On leaving he was afebrile. He started work, which was of an arduous nature, almost as soon as he had left. During the first day he felt ill, and on the second day he felt very very ill and extremely thirsty. He then asked the foreman if he could keep his job open for a week, and to this the foreman assented. He then went home and found his rectal temperature to be 105° F., and he could do nothing but lie in bed; his appetite had completely gone. He lay in bed from Tuesday until Sunday morning, when his temperature became normal, being as low as 97·7° in the rectum before rising. On the following day he returned to his work and had worked continuously for two years since that time, earning £2 a week. When I saw him the physical signs were compatible with a healed lesion, and he had no cough or sputum.

The injection of tuberculin in febrile cases is obviously not a method to be used indiscriminately; still, it is conceivable that small doses of tuberculin given to febrile cases which have had no tubercle bacilli in their blood might do good. In the above-mentioned case, however, it should be remembered that the temperature was normal before the reaction occurred.

The question also naturally arises as to how much better or worse off this patient would have been had he received a course of tuberculin after having this reaction. I might also add that the case was one tending to fibrosis.

New Cumnock, Ayrshire.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SPECIAL MEETING OF FELLOWS.

Cultural Methods in the Study of Diseases of Unknown Etiology.

ON Monday, Oct. 21st, at a special meeting of Fellows Dr. HIDEYO NOGUCHI gave his postponed demonstration. He said he proposed to take up several questions under the broad title of "The Application of Cultural Methods to the Study of Infectious Diseases of Unknown Etiology." His work on poliomyelitis had been conducted in association with Dr. Flexner. He had cultivated three groups of spirochætæ, the first two of which were pathogenic and the third saprophytic. The first group invaded tissue, the second resided chiefly in the blood, and the third or harmless group lived on the surface of mucous membranes or round about moist lesions. With regard to the cultivation of these spirochætæ, for the first two groups it was necessary to have in the culture medium a piece of fresh sterile animal tissue. This was not necessary in the case of the saprophytic form. For the tissue spirochætæ it was essential to have absolute anaerobiosis, which could be secured by means of an apparatus he had specially constructed. But this anaerobiosis was detrimental to the blood spirochætæ, as a small amount of oxygen was necessary. But for the saprophytic forms complete anaerobiosis was not needed. With regard to the virus of poliomyelitis, it did not matter whether it was visible or not, the mere fact of transmission from one generation to another was proof of the existence of the virus; and the morphological studies could be carried out afterwards. Rabies was known to be infectious in 1870, and the virus was able to pass through a Berkefeld filter. With regard to general paralysis many maintained that this was evidence of a previous syphilitic infection, and some even said it meant active syphilis. It could only be solved by finding the spirochæte in the brain of a general paralytic, and he succeeded in doing that after looking at 70 specimens, finding in this one a solitary specimen of the parasite. He then went over his material again and discovered it in 25 per cent. As all the material in the first search was from one hospital he obtained brains from several other hospitals, and found it in 48 cases out of 200 brains examined. The study of tabes dorsalis along these lines was very difficult and tedious, and he only detected the organism in one posterior column, and soon afterwards a New York colleague found it in another. He then described the luetin or skin test for syphilis, which was as certain as, and much easier to do than, the Wassermann test. He had been able to produce in rabbits lesions similar to those of general paralysis in man by inoculating dead spirochætæ every five days continuously for five months, then resting for five months, then by intracranial or subdural inoculation. He also exhibited some lantern slides which showed that the spirochætæ multiplied by longitudinal fission. Other lantern slides showed in an admirable manner the appearances of artificial cultures of various forms of spirochætæ. Dr. Noguchi also exhibited photographs of syphilitic orchitis in rabbits produced by pure cultures of treponema pallidum, and other slides consisted of photographs of spirochætæ obtained from the brain in a fresh state from a case of general paralysis; some of the parasites were injected into a rabbit and produced syphilitic orchitis, but the incubation period was very long, suggesting that the infection was a mild one. The methods he adopted in producing poliomyelitis were similar to those for causing experimentally relapsing fever. He concluded by demonstrating various stages in the virus of rabies; he did not know whether the change represented sporulation, or segmentation, or degeneration. He referred to Negri's observations and showed lantern slides indicating the form of parasites described by that observer. These bodies had been observed in the brains of dogs suffering from rabies; in rabbits these bodies had not been demonstrated, but he had observed numerous granules. Dr. Noguchi then referred to the "sporulation" forms found in cultures of the virus of rabies, and by means of lantern slides

illustrated the increase in size which these forms underwent in artificial culture media, until finally these bodies broke up into a large number of "granules" similar in appearance to those he had already described.

SURGICAL SECTION.

The Selection of the Incision in Cœliotomy.—Pyelo-radiography.

A MEETING of this section was held on Oct. 14th, Mr. G. H. MAKINS, the President, being in the chair.

Mr. C. A. PANNETT read a paper on the Selection of the Incision in Cœliotomy. He said that in abdominal operations a method of approach should be utilised which would leave the abdominal wall in a functionally intact state. It must be just as perfect a support to, and compressor of, the abdominal contents as previously, and the movements of the trunk must be carried out with the same facility as before. This object could only be attained if (1) no nerves were permanently damaged; and (2) wounds in muscle and aponeurosis were united by firm narrow scars, so situated that they were not subjected to undue cross-tension which would result in their stretching. He had made some observations upon the permanent effects upon the abdominal wall which might remain after the employment of some generally adopted incisions. Incision in the linea alba was so commonly followed by stretching of the scar and separation of the two recti, when the wound had been made below the umbilicus, that the merest reference to the condition need be made. Incision splitting the rectus fibres was commonly followed by paralysis of that part of the rectus which lay medial to the incision. He had seen very extensive paralysis of the rectus when incision in the linea semilunaris had been used for abdominal nephrectomy, or for removing a large peritoneal tumour. Lateral rectus sheath incision was widely employed when dealing with disease of the appendix or with any lesion for which an incision in the linea semilunaris could be adopted. He showed a diagram representing the condition of a patient three months after its employment in an operation for appendicitis. There was paralysis of a portion of the rectus, and the paralysed portion exhibited complete reaction of degeneration. In another case the outer band of the rectus reaching from the scar right down to the pubes was very weak seven months after operation. A diagram made from another case showed a bulging area situated chiefly on the mesial side of the inner extremity of a McBurney's incision. Oblique lumbar incision for exposing the kidney had led in one case to an oval area of paralysed muscle situated above the outer half of Poupart's ligament, some distance in front of the anterior end of the incision. Paralysis of a strip of the rectus below the umbilicus close to the middle line had also followed vertical incision, lateral to the linea semilunaris. He thought that these results depended upon (1) damage to motor nerves coursing through the abdominal wall; or (2) weak union of severed muscular or tendinous fibres; or (3) a combination of these two factors. Hernia in the linea alba was due to insecure union of the divided median tendon. Many of the results illustrated in the diagrams were to be explained by injury done to the motor nerves, and some to combination of injury to nerves and weak union. If the rectus sheath was securely sutured and good union obtained, even although the rectus was paralysed from injury to its nerves, no localised bulging occurred, because the sheath was pulled tightly over the paralysed rectus by the lateral abdominal muscles. Some bulging compared with the opposite side would, however, be seen when the patient coughed, but if the scar stretched bulging would occur. Quite apart from the fact that movements of the trunk were interfered with if the rectus was paralysed, some of the unpleasant after-effects of abdominal operation—namely, dragging pains, constipation, and indigestion—were due, not to adhesions, but to a general diminution of intra-abdominal tension. If one accepted the postulate that injury to nerves should be avoided, it was clear that this condition could only be complied with by making incisions (1) where there were no nerves; (2) parallel to the direction of nerves; or (3) across nerves only where these could be displaced out of the way of possible injury. He thought that an incision through the linea alba should never be employed, at least below the umbilicus. A paramedian incision through both layers of the rectus sheath, the muscle being retracted outwards, had all the advantages without the objections attached to an incision accurately in the middle line. The gall-bladder incision of Mayo Robson and Bevan should never be used. He himself employed for exploration of the gall-bladder region an incision which was a modification of Kocher's. A long paramedian rectus sheath incision was made from about one inch below the ensiform cartilage to the umbilicus, and the abdomen opened in the usual way. If the exposure was inadequate the anterior rectus sheath was separated from the muscle and pulled outwards, and the rectus itself divided part of the way across at a point midway between the ensiform cartilage and the umbilicus. Referring to the relative advantages of the Battle and McBurney incisions for reaching the right iliac region, he said that in 25 consecutive cases of acute appendicitis in which he had used the Battle incision one nerve had to be divided in four cases to gain proper access, whilst in 29 consecutive cases in which the McBurney incision was employed muscle fibres had to be cut across in one case, and there was no doubt that a nerve was injured, judging by the results which followed. It was certain that in these septic cases the McBurney incision healed more quickly than the Battle incision. The oblique incision in the loin recommended for operations upon the colon had certain objections. It was made in a region where the abdominal nerves were crowded together, and as muscle fibres had to be cut across it was not easy to discern and avoid the nerves.

Mr. FRANK KIDD read a paper on Pyelo-radiography. The problem of determining the physiological and pathological state of each kidney before operation had already been solved by means of the catheterising cystoscope and the Roentgen rays. Knowledge of the exact anatomical state of each kidney and ureter before operation was also of vital importance in obtaining perfect surgical results. This could now be obtained by pyelo-radiography, which rendered urinary surgery a more exact science than any other branch of surgery. The fundamental idea had been brought forward by Voelcker and Lichtenberg in 1906, and applied to clinical problems most extensively by Braasch of the Mayo Clinic. It was to pass a ureteric catheter without an anæsthetic, inject a colloid suspension of silver into the renal pelvis, and take a skiagram. The skiagram showed up the outline of the ureter, pelvis, and calyces, and also of the kidney itself. The various solutions employed and methods used for injections were discussed. The method made it possible to detect all the common congenital malformations of the upper urinary tract, such as reduplication of the pelvis and ureters, supernumerary kidneys, the nine possible varieties of "horse-shoe" kidney, solitary kidney, ectopic, atrophic, and cystic kidney. Examples of most of these conditions were shown on the screen, the most remarkable of which were: 1. A case of solitary kidney, which had presented itself clinically as a painful abdominal tumour. Pyelo-radiography enabled the diagnosis to be made, and the patient was saved from what must have been a fatal operation. 2. A case of double ureters and double fused kidneys on each side, with a tumour growing from the lower pole of the right kidney. The latter had been removed and the specimen was shown at the meeting. The method also proved useful in the diagnosis of dilatation of the pelvis, early and late, either mechanical or inflammatory in origin; in the diagnosis of renal and abdominal tumours; in the diagnosis of obscure abdominal pain; in the diagnosis of stone in the kidney and ureter, and in the diagnosis of renal infections. Little attention had been paid as to what exactly happened when a fluid such as collargol (5–7 per cent.) was injected into the renal pelvis. A large amount of evidence on this point was brought forward. 1. *Pathological.* Specimens removed at operation after the injection of collargol. These were reported on by Dr. Hubert M. Turnbull. 2. *Clinical.* Observations on the states of the urine that followed the collargol injections. 3. *Experimental.* Observations on the effect of injecting collargol into fresh sheep's kidneys at varying pressures maintained for varying times. These experiments were carried out by Mr. E. C. Lindsay. The following conclusions were drawn. The knowledge obtained by pyelo-radiography was of vital importance to the individual patient who wished to make certain of a successful result to his particular operation, and who

could not, therefore, afford to be operated on without it. The solutions so far employed (collargol, cargentos, &c.) did seem to irritate the kidney a little, but the irritation was a passing one, and was recovered from completely in a few days by a process of natural repair. The damage done was far less than that done by an exploratory operation. Those, then, who advised an exploratory operation in preference to carrying out ureteric catheterisation and pyelo-radiography could not criticise the method on the score of possible harm, as their own method caused far more harm and gave far less information. No doubt in the early future a solution would be found which would not irritate the kidney at all. Meantime collargol could be used in weak solutions (5–7 per cent.) under low pressures (30 mm. of Hg) and with as short an exposure as possible (less than 15 seconds). Caution was still necessary in advising pyelo-radiography. It should only be employed by those who were in a position to practise it assiduously in carefully selected cases—that is to say, cases in which otherwise an exploratory operation would seem necessary. The risk was far less than that of an exploratory operation. It was probably not wise to fill up more than one kidney unless the conditions were very exceptional, and that only on one occasion.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Complete Absence of the Internal Genitalia.—Pyosalpinx of an Accessory Tube.—Adnexal Tuberculosis.—The Serum Diagnosis of Pregnancy.

A MEETING of this section was held on Oct. 9th, Dr. W. S. A. GRIFFITH, the President, being in the chair.

The winter session was opened by the PRESIDENT, who gave the introductory address.

Dr. H. MACNAUGHTON-JONES read a short communication on a case of Complete Absence of the Internal Genitalia. In introducing his remarks on a case in which no internal genitalia could be detected, he said that among other instances he had previously recorded was a case of complete absence of introitus in a child (a small orifice leading to the urethra); a rudimentary vagina and uterus were present, but no adnexa could be detected. He had also had a case in which the external genitalia were normal, the uterus rudimentary, and the adnexa present; and another case similar to the present one. The age of the patient was 27. Her health was good, and an examination was required as the question of marriage arose. As in the other cases, bimanual, vaginal, recto-vaginal, and recto-vesical examinations were made. The external genitalia and vagina were normal; the uterus was represented by a nodule a little larger than a pea, and no vestige of adnexa could be felt. He dwelt on the importance in cases of primary amenorrhœa when menstruation was delayed of not putting off an examination. He had known cases (in one of which the patient had gone to Spa for treatment) where various remedies were used to induce catamenia when the genitalia were absent.—The paper was discussed by Dr. G. F BLACKER and Mr. DOUGLAS DREW, the latter referring to a case in which apparently, so far as pelvic and vaginal examination revealed, no uterus, ovaries, or tubes were present, yet at operation ovaries were found high up in the flanks together with a horse-shoe kidney in the pelvis.

Dr. MACNAUGHTON-JONES also showed a specimen of Pyosalpinx of an Accessory Tube from the Adnexa of a patient, aged 38, unmarried. The Fallopian tube at the right side was converted into an egg-shaped tumour, which contained a quantity of cretaceous matter, the result of an old pyosalpinx. At the left side the adnexa were healthy, but an exactly similar tumour existed at the outer edge of the broad ligament with histological features similar to that of the right side. The specimen was examined by Mr. W. S. Handley, and it was of interest as an instance of a cyst of an accessory Fallopian origin being converted into a pyosalpinx. At either side the cyst was incorporated with the round ligament.

Miss M. H. F. IVENS (Liverpool) read a paper on Adnexal Tuberculosis based on the experience of 23 tabulated cases of which all but one were apparently primary. An early diagnosis followed by operative treatment gave good results. The disease became much more serious when bowel complications had occurred. The history of an attack of obscure peritonitis in girlhood, followed by primary amenorrhœa, was given in four chronic cases, and partial or complete amenorrhœa was very common. Pelvic pain bearing no special relationship to menstruation was generally present, associated with leucorrhœa. Sterility was an almost constant feature; two patients only have borne each one child, many years previously. The majority were in the early "twenties"; 14 were married. In every case a varying degree of thickening of the tubes could be felt. Only two were unilateral. Laparotomy was performed in 22 instances for the removal of the diseased tubes, the uterus being removed only for special indications. Conservative treatment of the ovaries was possible in all but six cases. In one resection of the tube for the removal of a tuberculous nodule was performed. Drainage was avoided except in the presence of a secondary infection, and primary union usually occurred. Two cases died, one from post-operative hæmatemesis and one from septic nephritis. Sixteen were traced and did well. Three made a good immediate recovery, but were then lost sight of. One required a second operation for the removal of the remaining tube. The one case in which the disease was secondary died a year after operation. Two cases came under observation with acute abdominal symptoms due to the rapid enlargement of pre-existing chronic cysts, where the disease had apparently undergone a spontaneous cure. Miss Ivens therefore advocated the operative treatment of all cases of adnexal tuberculosis, except in the presence of a second active focus, and considered that the removal of tuberculous products not only had a very beneficial effect on the general health, but at the same time obviated the risks of later dissemination or local complications.—Professor H. BRIGGS (Liverpool), who alluded to the chronic character of Miss Ivens's cases, said that in more acute cases, which had some clinical resemblance to typhoid fever, operation seemed imperative. In the majority of cases there were tuberculous foci elsewhere, and their aggravation or relief by operation could not be locally governed.—Mr. DREW said that he had considerable experience in the question of operation for tuberculous peritonitis in children, but had not met with a case in which there was disease of the tubes. Possibly in Miss Ivens's cases tuberculous peritonitis was an antecedent factor. Mr. Drew asked in what percentage of cases a tuberculous endometritis was present. Possibly it was of frequent occurrence, but appeared to recover spontaneously after the main lesion was removed.—Dr. MACNAUGHTON-JONES remarked that a few years back he had read a paper before the section on Primary Tuberculosis of the Fallopian Tube, and had shown three specimens, and he referred to another paper that had appeared in the *Edinburgh Medical Journal*, in which statistics were collected of many thousand cases of genital tuberculosis. In these 8 to 9 per cent. were primary. In young persons, seeing the difficulty of diagnosis, every test for the presence of tubercle should be made. In Miss Ivens's cases the greater number were under 30, but 40 per cent. remained well some considerable time after operation.—In reply, Miss IVENS stated that her cases included types of both active and chronic disease. Tuberculous endometritis had been found once, but systematic curettage had not been practised, as leucorrhœa tended to disappear after removal of the diseased tubes. It was possible that in cases where tuberculous peritonitis had occurred in childhood the infection remained latent to become active with the onset of puberty.

Dr. R. L. MACKENZIE WALLIS and Dr. HERBERT WILLIAMSON contributed a paper on the Serum Diagnosis of Pregnancy, with a demonstration of apparatus and methods. The paper was read in two parts, Dr. Wallis taking the experimental chemical department and Dr. Williamson the clinical aspects. In Part I. Dr. Wallis dealt with the two methods devised by Abderhalden for the diagnosis of pregnancy—namely, the optical test and the dialysation method. The principle upon which these two tests is based is the reaction of the blood to foreign substances introduced from without. Any foreign body when injected into the circulation excites the production of a protective or guardian ferment, which rapidly destroys the substance. The proteins contained in placental tissue thus produce a specific ferment, and this can be detected in the blood serum of pregnant women by both methods from the seventh week and up to 15 days after labour. The tests depend, therefore, upon the presence of chorionic villi in the body, which are capable of being washed into the circulation and producing the

special ferment necessary for their disintegration. That such a ferment is mobilised in the blood has been conclusively shown by experiments on animals. For the optical test a good polarimeter was required, and also a preparation of placental peptone, the details of the isolation of this material being given. The splitting of this placental peptone into amino-acids by the ferment in the blood serum could then be followed by the optical changes that ensue. The technique employed by Dr. Wallis in the dialysation test was given in detail, including the preparation of the placental tissue, the testing of the dialysing tubes, and the collection of the serum. The necessity of absolute asepsis throughout was specially emphasised. The application of the ninhydrin reaction for the detection of dialysable substances was described, and attention drawn to the sources of possible errors. Judging from the results obtained with over 100 cases, the writer had no hesitation in stating that the test was of value in the diagnosis particularly of the following conditions: (1) the diagnosis of early pregnancy; (2) the differentiation of fibroids from pregnancy; (3) the diagnosis of chorion-epithelioma; (4) the presence of a retained placenta; and (5) the diagnosis of an ectopic pregnancy, where the latter has not been followed by tubal abortion and hæmatocele. In Part II. of the paper Dr. Williamson pointed out the importance of Abderhalden's work, remarking that if it be true that the blood of a pregnant or recently delivered woman contains a ferment specific to placental albumin, if this ferment be constantly present and can be easily demonstrated, if the sources of error are few and can be readily avoided, then the test possesses great value in both clinical and forensic medicine. He reported a series of 50 controls made by Dr. Wallis. Of these, 20 women were either in the last three months of pregnancy or had been recently delivered. In every case the result was positive. Thirty women were not pregnant, and in all these patients the reaction was negative. He then proceeded to give clinical details of 16 cases in which the test had been applied for diagnostic purposes. The patients had all been kept under observation and the results were: Correct deduction drawn from the test, 12; incorrect, 2; result still in doubt, 2. The cases were as follows: Suspected ectopic gestation, 3; pelvic and abdominal tumours where it was suspected that the whole or part of the tumour might be the pregnant uterus, 5; suspected chorion-epithelioma, 2; chorea in a woman of 21, 1; heart disease with amenorrhœa, 1; nephritis with exacerbation of symptoms and amenorrhœa, 2; late puerperal sepsis, 2; total, 16. The two patients who gave a positive reaction in the absence of pregnancy both suffered from pyosalpinx, and this suggested the advisability of ascertaining whether a similar result was common in suppurating cases. The controls made did not support this view. Dr. Williamson insisted upon the importance of subjecting at regular intervals to Abderhalden's test all patients who have borne a hydatidform mole, for should a chorion-epithelioma develop the test remains positive instead of becoming negative in a few days as after a normal pregnancy. This fact was well illustrated by the case (which he quoted in detail) of a woman who developed the symptoms of chorion-epithelioma 15 months after the expulsion of a mole. From his experience he drew the following deductions: (1) It is established that the serum of pregnant women contains a ferment specific to placental albumin; (2) that this ferment can be demonstrated from the eighth week of pregnancy until 10 days after delivery; (3) that it may be demonstrated both by the polarimeter and by the methods of dialysis; (4) that the former method is more reliable, in that the sources of error are fewer; (5) that the accuracy of the test depends upon the most scrupulous care in detail, and it is only in the hands of an expert that the results can be relied upon; (6) that the ferment is found only when chorionic tissue is present in the body; (7) it is probable that under certain conditions not fully understood at present, the colour reactions and optical effects produced by the ferment may be simulated; and (8) that the common sources of error have already been detected, and that in the near future the test may be expected to give reliable results.—The two papers were discussed by the PRESIDENT, Dr. ARCHIBALD E. GARROD, Dr. BLACKER, Dr. D EMBLETON, Dr. A. LEITCH, Dr. M. DONALDSON, and Dr. A. W. BOURNE.—Dr. WALLIS and Dr. WILLIAMSON replied.

SECTION OF OTOLOGY.

Exhibition of Cases.

A MEETING of this section was held on Oct. 17th, Mr. RICHARD LAKE, the President, being in the chair.

Mr. W. M. MOLLISON showed a case of Severe Injury to the Left Ear and Eye, which was of interest as promising further light on the pathology of eye fixation or the physiology of caloric nystagmus. While at sea three months ago the patient, a man aged 43, received a severe blow on the left side of the head, which it was feared would prove fatal, hence but little treatment was adopted. But he recovered generally, though with loss of sight and hearing on the left side. On admission to hospital the third to the seventh cranial nerves appeared to be functionless on the injured side. In the sound ear the upper tone limit was 20,000 vibrations, in the left 12,000. Ten turns in the rotation test showed 50 seconds nystagmus on the right side, 10 seconds on the left. An operation three weeks ago to restore the left meatus improved the left upper tone limit to 18,000. The damaged eye showed the rotatory movements very effectively. This eye would be removed in a few days.—Mr. G. J. JENKINS and Mr. W. STUART-LOW discussed the case, and it was decided to carry out a further series of tests before removal of the eye.

Mr. SYDNEY R. SCOTT showed a case of Sero-purulent Lepto-meningitis in which there was rapid recovery after he performed the translabyrinthine operation. The diagnosis was made on the presence of 3500 polymorphonuclear leucocytes per c.mm. in the cerebro-spinal fluid which was withdrawn by lumbar puncture. The meningitis arose in connexion with labyrinth disease, secondary to chronic suppurative otitis media.—The PRESIDENT asked whether the gravity of the case was enhanced by the employment of skin-grafting.—Mr. C. E. WEST said he had discontinued skin-grafting in cases where he could not find a fistula at the time of the operation, as he had had two unfortunate experiences.—Mr. J. F. O'MALLEY discussed what symptoms and signs should be held to indicate that vestibulotomy should be performed; also what were the risks from that operation. Bárány did not open the labyrinth in cases of circumscribed labyrinthitis with moderate hearing, unless the patient had severe vertigo and vomiting. Neumann regarded a case as inflammatory when the hearing was good, even when the tests showed no response from the vestibular apparatus, and he preferred to watch it rather than operate, and Mr. O'Malley's own practice was founded on that of those observers. In Mr. Scott's case the hearing was relatively good, and the patient was not acutely ill. The great risk in vestibulotomy was meningitis, and such cases should not be skin-grafted without serious consideration. The more efficient the graft the more completely would it imprison any pus which might be present.—Dr. DAN MCKENZIE supported Mr. O'Malley's remarks. Unless the labyrinth was obviously destroyed as a whole he was content to do merely the radical mastoid operation. Several members had shown cases in which fistulæ had healed and the labyrinthine irritation had passed off after the simple radical mastoid operation.—Mr. SCOTT, in reply, said he did not show the case because he had skin-grafted it, but to illustrate the method of early diagnosis.

Among other cases shown was one by Mr. HUNTER F. TOD of Trichophyton Granuloma, affecting the auricle and other parts of the body. There had been great benefit from the application of X rays.

DERMATOLOGICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Oct. 16th, Dr. J. J. PRINGLE, the President, being in the chair.—After some preliminary remarks by the PRESIDENT Dr. S. E. DORE showed a case of Granuloma Annulare of the hands in a man for many years resident in Ceylon, who also presented the condition known as "tropical skin."—Dr. A. M. H. GRAY and Dr. G. PERNET had observed good results from the treatment of the former condition by X rays.

Dr. GRAHAM LITTLE showed a case of Raynaud's Disease in a middle-aged woman with marked nail changes of the hands and feet.—The PRESIDENT, Dr. H. G. ADAMSON, and Dr. PARKES WEBER suggested the possibility of a ringworm invasion.

Dr. LITTLE also showed a case of unusually acute Acne Varioliformis of the Scalp and Face.—The PRESIDENT remarked on the rarity and difficulty of diagnosis in such acute cases in the early stages, and referred to the successful results reported from America by vaccine treatment, which his own experience had not enabled him to confirm.

Dr. LITTLE also showed a case of Chronic Hypertrophy of Both Lips, probably secondary to pyorrhœa alveolaris.

Dr. J. H. SEQUEIRA brought forward an example of Mixed Leprosy.—Dr. A. WHITFIELD referred to the use of salvarsan and tuberculin for diagnostic purposes in such cases, and Dr. PERNET related a case in which tuberculin had provoked an eruption of leprous nodules.—In reply Dr. SEQUEIRA stated that in his experience the Wassermann reaction was not constant in leprosy.

Dr. SEQUEIRA also showed a typical case of so-called Multiple Idiopathic Pigmented Sarcoma in an early stage in a Russian Jew.—The PRESIDENT referred to two cases of this disease under his care, in one of which spontaneous involution occurred; and expressed the opinion that pathologically the disease presented affinities with granuloma fungoides.—Dr. MACLEOD reported having found lymphomatous nodules in sections from one case.—In reply to the PRESIDENT, Dr. SEQUEIRA stated that there were evidences of gout in two out of the five cases which he had observed.

Dr. PERNET exhibited: (1) A case of Diffuse Vascular Nævus in a boy; (2) a case of Patchy Alopecia with Secondary Syphilis; and (3) a Permanent Alopecia following X ray treatment for tinea tonsurans with dystrophy of the nails.

Dr. W. K. SIBLEY showed a case of very extensive mixed Nævus implicating buccal and nasal mucous membranes.—The PRESIDENT, Dr. J. H. STOWERS, and Dr. SEQUEIRA discussed the case.

Dr. J. H. M. MACLEOD showed a case of Vesicating Urticaria affecting the face, arms, and hands in a girl aged 12, to elicit opinions as to diagnosis and nomenclature. He discussed its relationship with erythema multiforme, dermatitis herpetiformis, and hydroa vacciniforme.—The PRESIDENT said that he was familiar with such cases, especially in private practice, and experienced the same difficulty as the exhibitor in classifying them; he agreed with Dr. MacLeod that the best method of treatment was by intestinal antisepsis.—Dr. PERNET and Dr. A. EDDOWES made remarks on the case.

Dr. HALDIN DAVIS brought forward a case of Mycosis Fungoides in a woman exhibited some months previously. It had undergone marked improvement in many respects under arsenical treatment, no local remedy except soft paraffin having been used.—The PRESIDENT, Dr. PERNET, Dr. SEQUEIRA, and Dr. ADAMSON spoke on the case, which was one of much interest.

Dr. J. L. BUNCH showed: (1) A child with Keratosis Spinulosus of the Scalp; and (2) a man suffering from typical and extensive Xantho-Erythrodermia Perstans.

Dr. DORE showed for Dr. A. WINKELRIED WILLIAMS a case of Linear Atrophy of the Arms and Legs.

LIVERPOOL MEDICAL INSTITUTION.—The first ordinary meeting of this society was held on Oct. 16th, Mr. Robert Jones, the President, being in the chair.—The President read an inaugural address on the views held by the late Mr. H. O. Thomas, more especially on Intestinal Obstruction. The works of the late Mr. Thomas, with the exception of his splints, were too little known, partly owing to his writings having been published privately. Mr. Thomas, writing in 1884, recognised the futility of the commonly advocated methods of treating intestinal obstruction—namely, by purgation, enemata, and milk diet. He recognised that where a mechanical condition was the obstruction no medical treatment could avail anything, but that in cases of functional obstruction it was possible by resting the bowel, by rendering the contents above the block fluid and non-irritating, and by relieving pain, to give a favourable termination to many cases. The treatment he advised was first to relieve pain by hypodermic injections of morphia, to allay thirst by the administration of water, and to withhold all food that would add to the contents of the intestine. Cases so treated might go on for from 40 to 50 days. Resolution occurred by the patient passing first flatus, perhaps some small scybala, then a large pultaceous motion followed by watery evacuations. Mr. Thomas was particularly anxious about his cases at this stage, enforcing complete rest and allowing food to be given only very gradually and of such a kind as to produce as little intestinal residue as possible. The President alluded to the views of Ochsener, of Chicago, who had recommended lavage and starvation while he withheld cathartics.—Mr. Rushton Parker proposed a vote of thanks to the President, which was seconded by Mr. F. T. Paul.

UNITED SERVICES MEDICAL SOCIETY.—The opening meeting of the session 1913–14 was held at the Royal Army Medical College on Oct. 9th, Colonel Bruce M. Skinner, M.V.O., the President, being in the chair.—The President delivered the inaugural address, which dealt with the objects and uses of the society (*vide* THE LANCET, Oct. 11th, p. 1056).—Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., R.A.M.C., read a paper on Some Problems of Mobilisation specially affecting the Royal Army Medical Corps. In the course of a most interesting paper, which, however, does not lend itself well to summary, special stress was laid on the following points. 1. The first great problem in the mobilisation of medical units is the fact that these units are only formed on mobilisation. In most other units something exists in peace which can be used as a nucleus on which to commence, but in the Royal Army Medical Corps not only have we no nucleus, but it is necessary practically to destroy the whole existing peace organisation, so far as the subordinate *personnel* is concerned, in order to create the new units required for the uses of war. It is hardly sufficiently realised what an absolutely clean sweep there will be of all effectives from our hospitals when mobilisation is ordered. 2. The second great fact that must be faced is the extreme rapidity with which mobilisation will be effected. In 1899 the military hospitals were gradually stripped of their trained non-commission officers and men, but next time the denudation will be complete and immediate. This will lead to great difficulty until the home hospital reserve men of the St. John Ambulance Brigade have become accustomed to their duties. 3. A third difficulty is the great variety of duties exacted from our corps owing to the diverse nature of our active service units. This all means more complicated training and more need for specialisation. 4. The proportion of specially trained soldiers required for army medical purposes is much larger than in any other military units except perhaps the Royal Engineers and the Army Service Corps. In a general hospital there are 56 specially trained men out of a total subordinate *personnel* of 143, or 40 per cent. It will be evident that it is more difficult to create and maintain a unit of this description than one of simpler formation, though much larger in total numbers. 5. Since the *personnel* of our units is composed of three classes of men, fully trained serving soldiers, regular reservists that have been fully trained, and partially trained special reservists, it is not easy to determine what is the best proportion of each class nor how to maintain that proportion when decided. 6. Another difficulty is how best to allot the duties laid down for various officers on mobilisation to suit the special requirements of the Royal Army Medical Corps. 7. Finally, there is the question of numbers. Our Peace establishment serving at home is 3065, and we shall require 8781 non-commission officers and men to complete our War establishments on mobilisation. As the balance will have to be made up from reservists, who are in most cases privates, there will be an immense and immediate demand for non-commissioned officers. Lieutenant-Colonel Wilson made the following suggestions. 1. The duty imposed on all officers continuously and incessantly to train all the men possible in some special line of work. Dispensers, nurses, and clerks can be trained at all stations, and cooks at several centres, but the chief difficulty will be with mental attendants, packers and storemen, mercurial rubbers, &c. 2. To provide for the large requirements of non-commission officers every intelligent and well-conducted man should be encouraged to qualify at any rate for the rank of corporal. 3. Non-commission officers detailed for special positions in units should be practised in those duties in peace, and special attention might be given to returns relating to allotments of pay and separation allowances, &c., as the correct rendering of these returns would not only spare the Pay Department much trouble, but also prevent hardship and

suffering to the families and relatives of soldiers. It would be a good plan if in each unit one or two non-commission officers were kept constantly efficient in these returns and the regulations connected with them. 4. With regard to the allocation of duties of the officer commanding a regimental depôt or company, the officer commanding a unit, and the officer commanding details, it seems probable that the officer commanding a company of the Royal Army Medical Corps, the Assistant Director of Medical Services of a district, in fact, should be prepared, generally speaking, to undertake them all. 5. Officers of the Territorial Force should exert their influence to persuade their men to join category B. It seems a great pity that Territorial non-commissioned officers have to revert to the rank of private on mobilising in this category, but this ought not to prove a deterrent, as it is certain that in the great demand which is sure to exist for non-commissioned officers these men will be promoted again at once. 6. A proportion of non-commissioned officers should be allowed for category A of the Special Reserve. 7. Finally, it is to be recommended, not only for the Royal Army Medical Corps, but for all troops on mobilisation, that one of the two medical examinations at present laid down should be abandoned. The double system would probably lead to inefficient examination, medical officers relying on the previous or subsequent examination to settle doubtful cases, and when the enormous nature of the work is considered the difficulty is in no way diminished by requiring it to be repeated twice over.—Surgeon-General Sir W. Launcelot Gubbins, K.C.B., Director-General, Army Medical Service, Colonel J. Harper, A.M.S. (T.F.), and the President took part in the discussion.

Reviews and Notices of Books.

The Nervous and Chemical Regulators of Metabolism. Lectures by D. NOEL PATON, M.D., B.Sc., Professor of Physiology in the University of Glasgow. London: Macmillan and Co., Limited. 1913. Pp. 217. Price 6*s.* net.

IT appears that the substance of Dr. Paton's account of the Regulators of Metabolism was originally presented in the form of lectures, illustrated by lantern slides and by experimental demonstrations. The lecture form has not been preserved, but instead a subdivision according to subjects has been adopted, and "this is so clearly indicated by the use of head-lines and of heavy type in the text that an index has been considered superfluous." The author expresses his indebtedness to Biedl's "Innere Sekretion," a review of which appeared in THE LANCET of March 22nd, 1913.

The author takes up the position that "we now regard not only functional activity, but also structure, as a result of the chemical changes in protoplasm." Coördination of metabolism of all the different tissues and organs is necessary, and it is the purpose of these "Lectures" to consider the various factors which bring about this coördination and regulation. Three factors are chiefly concerned: (1) the nervous system; (2) the chemical products of various organs, the so-called internal secretions; and (3) what the author calls "hereditary inertia or inherited developmental tendencies." The last factor is dominant in embryonic life, while the first two become more fully prominent as development advances, and in the fully formed higher vertebrates they entirely displace the last. A short account in two sections—occupying about 30 pages—is given of "hereditary inertia" and regulation by the nervous system. The remainder of the work is practically devoted to the chemical regulators—internal secretions derived from ductless glands—a misleading title. The author prefers the term endocrinous glands. The sources of these internal secretions are classified according to their seat of origin into the following groups: From the nervous system, chromaffin tissue, hypophysis cerebri; buccal cavity, thyroid and pituitary; intestine, pancreas and mucosa of small intestine; branchial arches, parathyroid and thymus; mesothelium of the genital ridge, gonads and inter-renal bodies. The structure and physiology of each are then considered systematically.

Less than 30 pages are devoted to the consideration of chromaffin tissue, and, of course, considerable attention is given to adrenalin. The author discusses the various possible ways in which it acts. About six pages are assigned to the hypophysis, while reference is made to the action of hypophysin in the flow of milk, as noted by Schäfer and McKenzie. We failed to note any reference to the observation by Ott, which was made prior to the observation of Schäfer. About 16 pages suffice for the thyroid and about nine for the pituitary. The summary is concise and suggestive, but the author cannot stop "to consider the cause of endemic cretinism or the interesting experiments which have been made on animals to induce it by drinking the water of these goitrous districts"—i.e., the goitrous Alpine districts.

The pancreas and intestinal (small) mucosa together occupy nine pages. The pancreas is described as a "compound racemose gland." In most text-books the term "tubular" is used, not racemose. As to the islets of Langerhans, the author expresses the opinion that probably two kinds exist—the true and the false; the latter may be produced by changes in the acinal tissue as was first described by Dale. To the consideration of the thymus about 18 pages are given, and the relation of this gland to the gonads is proved to be of a very definite character, but the author has been unable to detect any reciprocal relation between thymus and ovaries. The thymus, like the gonads, in the male at least, exercises an influence on the rate of growth. The parathyroids are discussed in 18 pages. We take it that "von Eiselberg" is a misprint for A. von Eiselsberg.

To the gonads, or sex glands, about 40 pages are given, and the conclusion is arrived at that male and female gonads yield an internal secretion which acts upon the metabolism of the body to stimulate it in each sex in a specific manner, and that almost certainly this internal secretion is a product of the interstitial cells. These interstitial cells may be regarded as a middleman between the soma and gametes, and it is through them that the soma and gametes influence one another. A few pages devoted to inter-renal tissue bring the reader to Section IV., which deals with the interrelations of the endocrinous glands. This section is illustrated by a series of charts to show graphically the probable relationships. A short section is taken up with the relation of endocrinous structures and the nervous system. Evolution of endocrinous glands is discussed in five pages. The bibliography extends to five pages. The "Lectures" are dedicated to Mr. J. Francis Mason, M.P., "in recognition of generous help given to research."

The author has given an excellent, concise, and readable exposition of a fascinating subject, a subject which has been in part illuminated by his own researches and those of his pupils; and we have reason to believe that the proofs were passed for press in June last, long before the discussion that took place on this subject at the International Medical Congress in London. We think that the author is justified in choosing as his motto on the dedication page, "Ex tenebris lux."

The Principles and Practice of Medical Hydrology: being the Science of Treatment by Waters and Baths. By R. FORTESCUE FOX, M.D. Lond. University of London Press: Hodder and Stoughton and Henry Frowde. 1913. Pp. 295. Price 6*s.* net.

Dr. Fox's definition of his main title is as follows: "Medical hydrology is the science of waters, vapours, and mineral or organic deposits in connexion with waters as used in medicine, both by internal administration and in the form of baths and applications." Taken in all its manifestations

this is a large subject, and the author deserves credit for having been able to deal with it as fully as he has done in a work of no great compass.

The book is divided into four parts: I. The Physiology of Bathing; II. Hydrotherapy; III. Mineral Springs and Baths; IV. Indications for Hydrological Treatment, this last section including chapters on the geographical distribution of mineral waters and an index of spas. Section II. commences with a historical *résumé* of modern hydrotherapeutics, the pioneer of which in this country was Sir John Floyer, a physician of Lichfield, who published works on baths in 1697 and 1722. The medicinal use of baths and waters is at least as old as Hippocrates, who gives instruction for the use of the bath in disease in his treatise *De Regimine Acutorum*, and one medicinal use of the bath—namely, the removal of fatigue—is as old as Homer—e.g., *Iliad* XXII., 442, et seq. But, as Dr. Fox shows, it is only within the last 40 years or so that "a whole new science of hydrotherapy has been built up on a clinical and experimental basis." He concludes this chapter with a plea for the instalment of "medical baths," —i.e., of institutions where ordinary water, hot or cold, can be used for medicinal purposes under skilled professional control, and he contrasts the usage of foreign countries with that of our own, greatly to the disadvantage of the latter. The remainder of this section is devoted to an account of the various methods of hydrotherapy, where water is used as a vehicle of energy, and not on account of any chemical qualities which it may possess.

Dr. Fox's book will be found very useful by the ordinary practitioner who may not have access to that work which he calls "Sir Hermann and Dr. Parkes Weber's monumental work on Balneotherapy and Climatotherapy." It is pertinent here to refer to a letter by Dr. Fox in the *Times* of Sept. 6th, wherein he pointed out that in France, Germany, Austria-Hungary, Italy, Switzerland, Holland, Belgium, and Sweden in Europe, and also in America, there are either chairs of hydrology or lectures given thereon at various universities, while there are practically none in England. This lacuna, he suggests, should be filled by the University of London founding a chair in medical hydrology, through which facilities could be given to medical men throughout the Empire for studying the subject. Should such a chair be founded, Dr. Fox's book will form an admirable introduction to the lectures delivered therefrom.

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D. Edin., F.R.C.P. Edin., Professor of Pathology, University of Glasgow; and JAMES RITCHIE, M.A., M.D. Edin., F.R.C.P. Edin., Professor of Bacteriology, University of Edinburgh. Sixth edition. With 192 illustrations in the text and six coloured plates. London: Henry Frowde and Hodder and Stoughton. 1913. Pp. 736. Price 10*s.* 6*d.* net.

NOTWITHSTANDING the large number of English and American text-books that have appeared on bacteriology this work still maintains its position as that which, on the whole, is best suited to the needs of the medical student and practitioner. The feat of revision and the incorporation of new material without excessive enlargement of the work has once more been accomplished. The growing importance of the pathogenic fungi has necessitated the introduction of a new chapter dealing with these organisms. This accounts for the greater part of the increase in size and for the increased number of illustrations. The next most important addition is a section on the bacteriology of milk. The whole book has undergone that very difficult form of revision which consists in altering the point of view from which the old facts are regarded so as to bring them into proper relation with new facts and the most recent opinions. Thus, in the chapter on tuberculosis the section on tuberculins and their effects has been considerably modified, and in the allied subject of leprosy recent work on the attempted culture of the B. lepræ is incorporated, while the paragraphs on the pathology of anthrax have been revised. Turning to the B. typhosus and its allies much recent work finds summary recognition in slight changes of nomenclature, in the separate treatment of B. suipestifer, in the statements as to the varying frequency of B. paratyphosus A and B in different countries, and in the paragraph on mutation. Anaphylaxis is a subject not yet capable of absolute treatment, but the essential facts and the best authenticated theories are given with a leaning apparently towards the views of Friedberger.

The printing, paper, and general appearance of this edition are satisfactory, and the excellent illustrations are well reproduced. This sixth edition worthily upholds the standard of its predecessors.

How to Diagnose Small-pox: A Guide for General Practitioners, Post-graduate Students, and Others. By W. McC. WANKLYN, B.A. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H. With illustrations. London: Smith, Elder, and Co. 1913. Pp. 104. Price 3*s.* 6*d.* net.

SMALL-POX has been said to be the disease in which, more than in any other, it is possible to arrive at a certain diagnosis, and a "doubtful case" is practically unknown in a small-pox hospital. Here, however, the medical officer has experience of the disease and is able to follow his cases in their clinical course, while he also has the result of vaccination to aid him in the diagnosis of those few which remain uncertain. But it is otherwise with the general practitioner or the medical officer of health, whose diagnosis has to be made, probably, as a result of a single examination and at a period when the evidence may be much less definite than it will shortly become. Fortunately, even in these circumstances the disease is usually so definite that failure to suspect it is not very common. But it is sometimes overlooked, with serious consequences, while it is also not uncommon in the time of small-pox epidemics for other diseases to be diagnosed as variola on quite inadequate grounds.

Dr. Wanklyn's monograph is directed solely to the identification of small-pox; he leaves to the text-books the description of the course of the disease, and limits himself to a discussion of the questions to be answered when small-pox is suspected, and of the essential points which it is important to remember if the possibility of small-pox is not to be overlooked. We think that no one who has had any considerable experience of small-pox in this country will find himself in serious disagreement with any part of Dr. Wanklyn's exposition, which is based on exceptional personal experience gained in the preliminary sorting of London cases of small-pox sent to the hospitals of the Metropolitan Asylums Board. Among the points on which he lays special stress are the necessity of examination of the whole surface of the body and the distribution of the rash. The latter is illustrated by a useful series of diagrams, and the importance of looking for abundance of rash on parts which are subject to irritation is duly insisted upon. A well-marked rash cannot, he considers, be due to small-pox if the skin of a whole limb or other extensive area is entirely free from the rash. The "umbilication" of small-pox vesicles has long ceased to be regarded as pathognomonic, and Dr. Wanklyn emphasises the danger of relying upon this feature of distinction between variola and varicella. Recent and successful vaccination, he observes,

completely excludes small-pox, but he does not consider that the vaccinal condition is of great assistance to diagnosis in ordinary cases. This is, no doubt, correct when regard is had to the stage at which diagnosis has to be made. Well-vaccinated cases not infrequently show copious and typical rashes at the onset of their attack, although the effect of their vaccination on the subsequent stages of the pocks may be marked. The diagnosis of the initial rashes and their special characters are also fully discussed.

Dr. Wanklyn's explanations are clear, and the conversational style which he employs is well suited to his subject.

Action des Rayons X sur les Glandes Surrénales. By Dr. PAUL COTTENOT. Paris: Vigot Frères. 1913. Pp. 172.

THIS book describes some clinical and experimental researches on the action of the X rays on the suprarenal glands. Acting on the principle of the inhibitory effect of the rays on gland tissue, the aim has been to reduce high arterial tension by irradiation of these glands from behind. The necessary details of technique are given, and also those relating to some 30 cases of hypertension treated in this way. An apparently permanent lowering of the tension was observed in some of these, but not in all. On the whole, the results would appear to be very encouraging, and promise a new and quite scientific method of dealing with a condition that frequently baffles all efforts.

Tuberculin in Diagnosis and Treatment. By FRANCIS MARION POTTENGER, A.M., M.D., LL.D., Medical Director of the Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California. London: Henry Kimpton. Glasgow: Alexander Stenhouse. 1913. Pp. 243. Price 12*s.* 6*d.*

THE literature on the use of tuberculin is increasing at a rapid rate, but it is only by the accumulation of evidence that a definite opinion can be arrived at. Dr. Pottenger has had the advantage of watching his cases constantly, for nearly all of them were treated in a private sanatorium where the general conditions were of the best. He takes a broad view of tuberculosis and its treatment. Whilst he has been an ardent supporter of the use of tuberculin, he states that he has always reinforced it by every measure that would improve the physical and mental condition of the patient. He points out that the mere injection of tuberculin is not treating tuberculosis. He further maintains that tuberculin acts solely on the tuberculous process, affecting the general well-being of the patient indirectly; general hygienic and tonic measures and those that improve the mental condition of the patient, on the other hand, affect every organ and function of the body and act upon the tuberculous process indirectly. That is to say, the two are supplementary and both are essential to best results. It is of the greatest importance that these facts should be thoroughly grasped by all practitioners. Tuberculin is only one factor in the general management of tuberculosis, and to employ it alone without respect to common hygiene and due instruction of the patient as to the life he should lead can lead only to disappointment.

Another matter to which Dr. Pottenger rightly draws attention is the demand by many for an exact schema showing how tuberculin may be given by rule—namely, increasing the dose with a certain definitely stated rapidity and at definitely stated intervals. We agree with him when he says that those who expect good results from such routine use of the remedy will be disappointed. The effect of each dose should be watched and the subsequent ones administered accordingly. In discussing the value of tuberculin as a diagnostic agent Dr. Pottenger insists that a tuberculin reaction "in itself only indicates that tuberculosis antibodies are present. They may be due to an active, a quiescent, and, for a certain time after healing has occurred, to a healed lesion." We believe that the majority of physicians will agree that the tuberculin test for diagnostic purposes is not to be relied upon, as it does not distinguish between quiescent and active disease. Dr. Pottenger supports the proper administration of tuberculin as a therapeutic agent, but strongly deprecates its indiscriminate use. He earnestly advises all those who are intending to adopt tuberculin in the treatment of tuberculosis first to study the employment of the remedy with someone who has had experience in its use. With this advice we are entirely in accord, for in the hands of those who have not watched its manifestations in actual practice harm may result if the patients are not carefully selected and if the correct sequence of doses is not followed.

We are in accord with the part of this work which deals with the clinical details, but some of the theoretical considerations will probably need revision in a future edition.

The Student's Handbook of Gynæcology. By GEORGE ERNEST HERMAN, M.B. Lond., F.R.C.P. Lond., F.R.C.S. Eng., Consulting Obstetric Physician to the London Hospital. Second edition, revised by the author, with additions by R. DRUMMOND MAXWELL, M.D. Lond., F.R.C.S. Eng., Assistant Obstetric Physician to the London Hospital. With 6 coloured plates and 194 figures in the text. London, New York, Toronto, and Melbourne: Cassell and Co., Limited. 1913. Pp. 587. Price 7*s.* 6*d.* net.

THIS book is in reality a condensed edition of Dr. Herman's work on diseases of women, published at a third of the cost. The diminution of size has been obtained by omitting explanatory, argumentative, and speculative matter, references to rare cases, and descriptions of operations not commonly performed. Since, in revising the second edition of this handbook, Dr. Herman has made free use of the additions contributed by Dr. Drummond Maxwell to the fourth edition of the larger book, the latter's name has been added on the title-page. We have so recently expressed our favourable opinion of the original work in its fourth edition that there remains little to be said of this handbook. The condensation appears to have been made with discretion, and nothing has been left out which is really essential to the student. We have no doubt that students will welcome the opportunity of reading what Dr. Herman and Dr. Maxwell have to say on the special diseases of the female sex, and the book should enjoy a well-deserved popularity. It will certainly prove of value to the student, and, based as it is on a very large clinical experience, it should be particularly useful to him in his clinical work in the wards and out-patient department.

A Manual of School Hygiene. By EDWARD W. HOPE, M.D. Edin., EDGAR A. BROWNE, F.R.C.S. Edin., and C. S. SHERRINGTON, M.D. Cantab., F.R.S. New and revised edition. Cambridge: At the University Press. 1913. Pp. 311. Price 4*s.* 6*d.*

THIS excellent little book, the first edition of which was reviewed in THE LANCET of August 10th, 1901, is now presented in an enlarged form. When first published the book rather anticipated the requirements of the future and came almost before its time. Preventive medicine, school inspections, and infant consultations had not then attracted the great following they now command; but much has been accomplished since that date, and many excellent works have been published on the subject of school hygiene, so that much is expected of books which cater for the needs of school nurses, health visitors, and sanitary inspectors. The book is immensely strengthened by the six chapters on physiology which have been added by Professor Sherrington; but while it covers the ground required by the institutions

which grant diplomas in school hygiene and sanitary science a great deal is demanded of students nowadays, and it can hardly be claimed that it fulfils all the requirements, especially with respect to the elementary anatomy and physiology of the special senses and nervous system. The chapters on school buildings, ventilation, warming, school furniture, and writing are perhaps sufficiently full, but the same can hardly be said of those on the general functions of the body, which have been most admirably outlined by Professor Sherrington, but which are lacking in the specific details so eagerly looked for by intending examinees, who appreciate general principles and philosophic deduction less than hard, dry facts, which find but little place in the delightful reading supplied by Professor Sherrington. The book is far too good, we fear, to achieve a great popular success.

Handbuch der Vergleichenden Physiologie. Herausgegeben von HANS WINTERSTEIN. Lieferung 63. Band II. *Physiologie des Stoffwechsels.* Zweite Hälfte. Jena: Gustav Fischer. 1913. Pp. 305–480. Price 5 marks.

R. Burian continues his account of Excretion, and indeed approximately one-half of the whole text is given to excretion in worms, the old term emunctories being still retained for the excretory apparatus. Only in the case of a very few worms is a specific excretory apparatus absent, or at least has not been yet detected. A very full account is given of the researches of Keeble and Gamble on convoluta. The emunctories in plat-helminths and rotatoria are represented by a water-vascular system, in parasitic nematodes as lateral canals, and in annelida as segmental organs or nephridia. In this, as in other parts of the "Handbuch," there is an almost bewildering wealth of detail that can be appreciated only by professed zoologists, and indeed only by those zoologists who have made the group of worms a special study. References to the literature run into about nine pages. J. Strohl begins his account of the excretions in the mollusca, which occupies about 50 pages.

Maladies du Rachis et de la Moelle. Par MAURICE AUVRAY et ALBERT MOUCHET, Chirurgiens des Hôpitaux de Paris. Fascicule XIV. du Nouveau Traité de Chirurgie Clinique et Opératoire, publié sous la direction de A. LE DENTU, Professeur Honoraire de Clinique Chirurgicale à la Faculté de Médecine, et PIERRE DELBET, Professeur de Clinique Chirurgicale à la Faculté de Médecine. Avec 211 figures intercalées dans le texte. Paris: J. B. Baillière et Fils. 1913. Pp. 528. Price, paper, 12 francs; bound, 13.50 francs.

THE surgical aspect of diseases of the spine and spinal cord is one of increasing importance, not only by reason of the impunity with which surgical procedures in these regions are now undertaken, but also because of the fact that surgical intervention can often accomplish much where medical treatment is unavailing. In the present volume the authors have dealt with those diseases of the spine and cord for which surgical advice and skill are sought, and they have produced an excellent and succinct treatise on the subject.

An introduction on the surgical anatomy of the parts concerned, and on normal physiology and pathology of the cord (we do not quite see why paragraphs on bulbar syndromes need be included), is followed by a full description of operative technique, in which the details of various operations as practised by well-known surgeons are supplied, including the intradural resection of posterior roots and lumbar puncture. Some 150 pages are devoted to traumatic disturbances, fracture dislocations, and wounds; other subjects to which much attention is given are congenital defects, spina bifida, congenital scoliosis, vertebral osteomyelitis, spinal tumours, Pott's disease, syphilitic and other forms of spondylitis. The chapter on circumscribed serous meningitis is rather inadequate, inasmuch as the section on its therapeutics consists mainly of excerpts from the work of other surgeons, and there is little indication either of the authors' own experience in this disease or of their opinion of the methods adopted by others. The attitude they assume in regard to the treatment of Pott's disease is unmistakably conservative. They are strongly opposed to surgical interference in any shape or form, and laud the results obtained on orthopædic and general lines.

The book as a whole is well calculated to supply the practising surgeon with modern information on the surgical treatment of the diseases of the spine and spinal cord.

LIBRARY TABLE.

Nervous Breakdowns and How to Avoid Them. By CHARLES D. MUSGROVE, M.D. Edin. Bristol: J. W. Arrowsmith. 1913. Pp. 188. Price 2*s.* 6*d.* net.—This little book, the motto of which might be taken to be "Prevention is better than cure," contains much commonsense advice on the education of the individual in the preservation of his health. What to eat, how to eat, how much to take, when to take it, fresh air, exercise, rest, sleep, recreation, holidays—these are some of the topics on which the author discourses, combining shrewd worldly wisdom with apt, if homely, illustration, so that he who runs may read. The business man might dip into this little volume with great advantage to himself; in fact, all who come under the stress of modern existence may cull from its pages simple truths and sound principles by which to regulate their lives.

How to Succeed as a Trained Nurse. Edited by Sir HENRY BURDETT, K.C.B., K.C.V.O. London: The Scientific Press, Limited. Pp. 192. Price 2*s.* 6*d.* net.—This little book bears as a subtitle "A Guide to her Remunerative Employment, with Particulars of the Various Openings in the United Kingdom and Abroad, Government and Municipal Departments, Associations, and Coöperations where the services of private nurses are in demand." This is a sufficient indication of the scope of the book, which is intended for all certificated and working nurses throughout the country. It is divided into two parts. The first consists of four chapters: The Private Nurse from the Employer's Point of View; Chief Branches of Nursing, their Openings and Prospects; Central Midwives Board; and Outline of the Principal Laws Affecting Nurses. An interesting point is made in discussing the question of a change of nurse when the patient's condition merges from that of acute illness into protracted convalescence. The strictly technical capacity, which was the main factor that influenced the medical man in choosing a nurse for an acute case, may be overshadowed in the later stages by a temperamental disability which, negligible in a critical stage, becomes a serious matter during convalescence. A nurse accustomed to a succession of serious cases may not fit well into the routine of family life and convalescence. In that event, the patient or the nurse, or both, may become restive, and a change in the "type" of nurse is recommended. The second chapter deals with hospital and Poor-law appointments, private, mental, district, village, monthly, and fever nursing, visiting nurses, army and navy nursing in all its branches, colonial and mission work, and so forth. The third describes the requirements under the Midwives Act; while the fourth gives useful pointers on engagement and dismissal, wages, gifts, testimony in courts, infectious diseases, and other matters, ending with a statement of the nurse's position under the National Insurance Act. The second part consists of a directory and detailed account of the various Government and municipal departments that employ nurses, of associations for the hire of nurses, British nursing

associations, a list of cottage hospitals and institutions employing nurses, and details as to provident funds, examining bodies, nurses' benefit societies, and so forth. Altogether a useful little book.

Messrs. Baillière, Tindall, and Cox ask us to state that they have been appointed the London publishers of Dr. L. Duncan Bulkley's "Diet and Hygiene in Diseases of the Skin" (New York: Paul Hoeber. 1913), reviewed in THE LANCET of June 14th, p. 1670.

New Inventions.

THE "SIGNAL" VISION TEST TYPE.

THIS test type has for its signs the Block E, after the fashion of Hirschberg's test types, but only one sign is given for each grade of the test. The signs are mounted on turntables, so that their positions can be varied indefinitely. In one model the whole of the turntables are geared together by a simple pulley arrangement so that the movement of a milled head at the front bottom edge of the board causes all the signs to turn in different directions. In the simpler model the turntables have knobs projecting behind the board by which they are moved as required. This test is of particular value where it is desired to make a subjective test of vision with a minimum of error due to the "mental factor"—e.g., in testing seamen, railwaymen, or other employees whose vision is a matter of importance, for this test requires no knowledge of letters, only the minimum power of imitation. The test has already been in use for testing school children for some time with

excellent results. As a school vision test the children are taught to regard the E sign as three fingers, turned up, down, to the right or left. The teacher draws these signs on the class blackboard in large size and teach the whole class "signal drill," showing them how to stretch out three fingers of both hands in the positions of the fingers of the E sign pointed to. After this drill vision testing is quick and sure. The test should be hung in full daylight (not sunshine); a monitor should stand beside the test holding a sheet of dull coloured card so as to cover all the signs below the one the child is looking at. The child should stand toeing a chalk line drawn at the distance of 16 ft. 6 in. from the test. The examiner sitting slightly behind the child will see both the signs and the signal of the child. The signs should be altered in position for each child by the monitor turning the milled head or one or two of the discs. Except that the test will get dirty there is no objection to letting it hang in the class-room, for it cannot be learned by heart. The illustration shows how the response is made. On the back of each test-card there is gummed a printed sheet with the instructions as above and a figure showing the manner of signalling with the arms and fingers.

The test is made in excellent fashion by Messrs. Curry and Paxton, Great Portland-street, London, W.

N. BISHOP HARMAN, M.B., B.C. Cantab.,
Harley-street, W. F.R.C.S. Eng.

A NORMAL ADJUSTABLE STETHOSCOPE.

THE advantages of this new pattern stethoscope I have found to be very great. The chest-piece is made of aluminium. The opening which receives the sound waves is twice the capacity of the two tubes leading to the external auditory meatus. The calibre of the instrument is perfectly equal all the way through, no interruption of any kind occurring either where the metal tubes join the tubing or where the tubing joins the chest-piece, owing to the specially constructed outside tapered knife-edge joints. The chest-piece is made to revolve, so that it is possible to examine the side or back to a very considerable extent without disturbing a very sick patient and without causing the tubes to kink or touch the bed-clothes, while the physician can examine all anterior parts, including the sides,

without changing position. The instrument is made portable by having the spring hinged, and it is of considerable advantage that the arms can be set up at a particular angle coinciding with the direction of the auditory meatus. The stethoscope has been tested and approved at various sanatoriums and hospitals in Great Britain and abroad. The rubber tubes are of especially heavy fine rubber, so that outside noises are excluded almost entirely and no vibrations are set up in the instrument itself at any point. It is termed a normal adjustable stethoscope because it conveys the sound waves emanating from the skin and underlying structures covered by the chest-piece without appreciable loss, without magnification or diminution of either the whole or any component parts making up the complex wave of sound, and without the production of adventitious sounds. While the heart sounds can be heard through the clothes such technique must be condemned. For children and very emaciated adults a localiser has been devised for use with the instrument, and this embodies the same principles on a smaller scale, thus making a very complete instrument. Great care should be used in getting ear-pieces that will fit and be comfortable.

The instrument is made by Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W.

GORDON GROTE COPELAND, B.A., M.B.
Toronto, Canada.

AN IMPROVED MOUTH GAG.

THE illustration shows a modification of Doyen's incisor gag. The handles, which are straight, are hinged to the tooth pads by swivel joints, and can thus be swung over to either side of the mouth. I have found it very useful in enucleating tonsils with the guillotine by leaving an abso-

lutely free field at the angle of the mouth for the depression of the guillotine handles. During removal of the right tonsil the handle of the gag is swung to the right side, and of the left tonsil to the left side.

The instrument has been made for me by Messrs. Mayer and Meltzer, 71, Great Portland-street, London, W.

W. S. KERR, M.B., C.M. Edin., F.R.C.S. Edin.,
Honorary Surgeon, Ear and Throat Department,
Sheffield. Royal Infirmary, Sheffield.

THE LANCET.

LONDON: SATURDAY, OCTOBER 25, 1913.

A County Court Judge and Medical Referees.

A county court judge sitting recently in the Eastern Counties as arbitrator under the Workmen's Compensation Act was asked to summon a medical referee to sit with him as medical assessor in five or six cases which were to come before him. The applications thus made the learned county court judge declined to grant, and it will be just, before expressing disapproval of the course thus adopted, to quote in full the reasons which he assigned for it, as reported in the local newspapers. "There have been so many similar applications," he said, "that it may be well to state why I do not, as a rule, think fit to summon an assessor. It is not from any want of appreciation of the eminent doctors who would be called to assist me, and for whom I have the very highest regard, but the Act of Parliament does not mention any ground upon which the judge is to exercise his discretion in invoking such assistance, and reported decisions throw but little light on the subject. Even that little is of the negative kind. This much, however, may be gleaned from the reports. The position of a medical assessor is anomalous. He is not a judge. He is not a juror. He is not a witness. His communications to the judge are not made upon oath. He cannot be cross-examined upon them. They are not evidence of any fact. They cannot be used either to supplement, or to vary, or to contradict sworn testimony. His office is merely to masticate the medical pabulum for the judge. That is a function which judge and jury have long been in the habit of discharging for themselves and the public." The county court judge further intimated that if during the hearing of any matter a question arose which seemed to demand the consideration of a medical referee it could be submitted to such a referee and his report obtained before an award was made.

The concession is something, but it does not alter the fact that the county court judge refused to accede to the requests made by a large number of suitors who believed that in the interests of justice the whole of the medical facts relating to their cases should be laid as early as possible before a medical referee. That a county court judge has an absolute discretion in such matters assigned to him by the Workmen's Compensation Act we do not for a moment dispute, but we entirely fail to see why the absoluteness of that discretion should be advanced by him as a reason for declining altogether to employ the expert assistance provided for him without reserve by the legislature, or for dispensing with such aid against the expressed wishes of suitors. Nor does the rest of his reasoning strike us as in any way more cogent. No one would wish a technical assessor in a court of law to fill the position of a juror or a witness, or to be compelled to submit to cross examination; indeed, we fail to see how, in such circumstances, he would be rightly described as an assessor. A medical referee is not asked to contradict sworn testimony, but he may, we submit, be usefully consulted in the task of discrimination where sworn testimony relating to obscure medical matters is of a contradictory character. If courts of arbitration were constituted, presided over by medical referees, and if it were found in practice that arguments upon questions of pure law took place in them upon frequent occasions, surely no one would question the wisdom of appointing legal assessors to advise upon the decisions which might be given; and no medical arbitrator, knowing that important pecuniary considerations were involved, would refuse to accept whatever legal assistance might be placed at his disposal to deal with questions of law. The parallel suggested is a fairly close one. Under the Workmen's Compensation Act some of the most important issues to be decided, involving considerable sums of money to the parties, turn upon purely medical questions of a kind involving considerable medical knowledge if the correct solution of them is to be found. Applications to continue or discontinue awards afford examples which need hardly be dwelt upon in detail. In such cases, even with the fullest opportunities for inquiry and examination of the workman, medical witnesses may rightly advance conflicting opinions, and these and all other cases are rendered more difficult by the patient being a man or woman who may desire fraudulently to derive profit from a wrong decision being arrived at, or who may more or less honestly have deceived his medical man as well as himself as to his condition. Again, the question at the root of the whole matter, namely, whether the injuries or alleged injuries are the result of an accident at all, often presents difficulties which a lay arbitrator must necessarily be better able to decide with the help of absolutely unbiased expert advice, based upon appreciation of the medical points submitted on both sides. The "mastication of the medical pabulum" is a function which judge and jury have long been in the habit of discharging, but this does not bind us to the opinion that the function described has been satisfactorily performed in the interests of justice during the past, or that it is more likely to be so in the future.

Recent legislation, particularly in relation to workmen's compensation, has enormously increased the bulk of the medical pabulum submitted for mastication and deglutition in courts of law, and the development of medical science in all its branches, and in directions which a few years ago were unexplored, has equally exaggerated the complexity and the varied nature of the material to be assimilated. The institution of the medical assessor in a particular class of case was welcomed by many suitors as well as by medical men as an innovation likely to be followed as a precedent in future legislation—its result should be that medical evidence would be given before a tribunal capable of understanding it. It is in the interests of justice and of fairplay to litigants, whose cases may be no less just because they are not easy to be understood by laymen, that we are in favour of the extension rather than the curtailment of the system of medical assessors in

inquiries into medical facts. With regard to the weight assignable to the wishes of one or both parties that a medical assessor should be present we would add this. The party which has a weak case medically would be the one least anxious to submit it to a medical man for determination, just as the lawyer with a weak case legally, if he had the choice, would be less desirous than his opponent to have it submitted to a strong judge and a sound and learned lawyer. On the other hand, the party having, or believing himself to have, the stronger case medically—that is to say, the party desirous of having the true facts rightly understood and established—would be the one most anxious to see the function of "masticating the medical pabulum" thoroughly and efficiently fulfilled. And before any case is heard the parties know better than the judge what is the nature of the testimony which they are prepared to submit.

New Aspects of Diabetes.

PROFESSOR CARL VON NOORDEN, of Vienna and Frankfort, has contributed so largely to our knowledge of the pathology and treatment of diabetes that the clear and practical account of his views on these matters which he has given in some lectures delivered before the New York Post-Graduate School is of special interest. These lectures have been published[1] in book form and constitute a highly suggestive and interesting contribution to the literature of the subject. Professor VON NOORDEN believes that the control of sugar formation and of its distribution is situated in the liver, and that while the other organs elaborate and consume sugar they do not share in its production. He sums up the activities of the liver in regard to sugar as follows: the liver takes up the carbohydrates brought to it by the portal vein, and converts them into glycogen and perhaps into fat when there is great excess. If there should be a very rapid and copious supply of sugar to the liver a portion escapes conversion into glycogen, and gives rise to hyperglycæmia and subsequently to alimentary glycosuria. The intrahepatic decomposition of protein leads to sugar formation, though whether this occurs as a result of conversion of part of the protein itself into sugar or by stimulating sugar production is uncertain. Professor VON NOORDEN also brings forward evidence to show that if the available carbohydrates and the protein substances do not yield sufficient sugar for the needs of the moment, this substance can be formed from fat. Lastly, a diastatic process occurs in the liver by which the glycogen is reconverted into sugar. Normally the control of sugar formation in the liver results in a small supply to the blood during rest and a copious supply during work, and it is the need of the tissues for sugar which constitutes the supreme, and perhaps the only, factor in regulating the amount of sugar production.

In studying the influence of other organs upon the liver, the part played by the pancreas and the chromaffin tissues is most noteworthy. These organs exert opposing effects upon the excitability of the sugar functions of the liver: while the pancreas produces an inhibitory effect, the chromaffin tissues have a stimulating influence. According to Professor VON NOORDEN, other tissues exerting an influence upon the hepatic sugar functions do so indirectly through one or other of these two channels, the pancreas or the chromaffin tissues. It would appear, for example, that the nervous system acts in this respect chiefly through the latter; the nervous influence passes down by the left splanchnic nerve to the left suprarenal and thence to the right. CLAUDE BERNARD'S "piqûre" diabetes is in effect only an adrenalin glycosuria, resulting from a stimulation of the medulla causing a stimulation of the suprarenals. The thyroid acts, on the other hand, by inhibiting the excitability of the pancreas and the pituitary acts in like manner. Professor VON NOORDEN urges that failure to oxidise sugar in diabetes, which was the basis of some of the theories of that disease, has not been proved, and he maintains that there is over-production of sugar, and that its immediate cause is to be found in the over-excitability of the sugar-forming function of the liver. Normally over-production does not occur, the pancreas and chromaffin tissue ensuring accurate regulation. Briefly stated, his view of diabetes is that the sugar-producing functions work in an uncontrolled and wasteful manner and flood the blood with unnecessary material. He states that we have no grounds for assuming that the chemical processes leading to sugar formation in the liver are qualitatively altered in diabetes; the change is a quantitative one, due to a disproportion between the strength of the stimulus and the response of the sugar mechanism to it. He further believes that in all cases of chronic diabetic disturbance of metabolism pancreatic insufficiency exists, and he therefore supports the contention of the essential unity of diabetes in man.

The principles of treatment are carefully considered by Professor VON NOORDEN, who rightly urges the great importance of trying to lessen the condition of hyperglycæmia. He points out that if the urine is not permanently sugar-free, but from time to time contains even small quantities of sugar, then it is certain that there is hyperglycæmia. He has found that in diabetes the kidney becomes less permeable to sugar as time goes on, so that whereas at the beginning of the disease glycosuria appears when the sugar content of the blood is 1 per 1000, later the urine may be free from sugar although the blood may contain 1·5 per 1000. He considers carefully the influence of carbohydrate restriction and its effect in lessening the over-excitability of the sugar-forming apparatus. He discusses the use of oatmeal and its restrictions and the treatment of acidosis. While his views as to the pathology of the disease are admittedly speculative, they are based upon well-established experimental facts, of which they afford a more satisfactory explanation than many of the theories previously put forward. On the other hand, his views on treatment are the result of a very wide practical experience. We have read his lectures with interest and can commend them to our readers as being both instructive and practically useful.

[1] New Aspects of Diabetes: Pathology and Treatment. By Professor Dr. Carl von Noorden. Bristol: John Wright and Sons, Limited. London: Simpkin, Marshall, Hamilton, Kent, and Co. 1912. Pp. 160. Price 6s. net.

Anatomical Nomenclature and the Medical Student.

TRANSITIONS come about in strange ways, and it is characteristic of innovations, into whatever department of life they come, that however tardy and far removed from reality their initial stages may have seemed, their actual advent strikes one as something very sudden, very real, and very unconsidered. To-day it seems to the medical student that abruptly and all unconsidered a strange new-fangled set of anatomical names is being thrust upon him. To some extent he is justified in this belief, and yet the system of anatomical nomenclature known and disliked as the B.N.A. is no new thing, for nearly 20 years have gone by since the Basle *Nomina Anatomica* were drawn up for the use of anatomists. It is, however, only during the present year that the system has become widely adopted in the text-books most used by medical students; and there are already signs that the student does not intend to let the innovation pass unchallenged. An editorial article in the current issue of *St. Bartholomew's Hospital Journal* has raised the question in a very direct fashion, and it is likely that students in the London schools will not let the matter rest here. It may be well, therefore, to focus some of the points under discussion.

In the first place, the Basle *Nomina Anatomica* came into being because there was, and is, a real need to revise some of our anatomical terminology; so much is agreed on all hands. But in the second place the B.N.A. came into English text-books for commercial rather than for scientific reasons; so much is shrewdly diagnosed by the author of the article referred to. Although never being, and never claiming to be, a universal anatomical nomenclature, the system was taken up in America and in the Colonies at a time when the British anatomists as a body were holding aloof from it. Such a state of affairs naturally led to a diminution in the American and Colonial sales of the standard British text-books which still retained the old terminology. It matters not how eloquently the authors of text-books may plead the scientific gain of the so-called "new terminology"; it was the possibility of increased American and Colonial sales rather than the scientific gain that led to its adoption in the British text-books. Still, though the student may dislike the Basle system, and though he may dislike the manner of its being thrust upon him, he must be prepared for some reforms in anatomical nomenclature. The study of anatomy is an ever-advancing science, and the language of the anatomist must be a plastic one, capable of modification and extension in harmony with progressive discovery. There is no doubt that our old terminology needs revision, and there is also no doubt that the "new terminology," already nearly 20 years old, cannot be regarded as finality. Indeed, so far is this the case that a very wide demand exists for a revision of the Basle nomenclature, and the latest phase of the question is the serious attempt undertaken by British anatomists to organise an agreement between all English-speaking teachers for such a revision. Now although preliminary stages are progressing as rapidly as possible, it must necessarily take some years before the proposed revision for English-speaking schools is issued. It is safe to say that when this comes about a large number of B.N.A. terms will be deleted, or so far altered as to be unrecognisable, and the text-books written to-day in the terminology of the Basle agreement will be to some extent strange to a future generation of students.

It seems, therefore, that in the present scramble for issuing anatomical works in the new terminology an unwarrantable burden may be imposed upon the student. He may be learning names which are difficult for him to familiarise himself with, and which will be replaced by new ones in the not distant future; and he certainly has the right to ask if all this is being done for his good. He is told that it is his gain, that he may become conversant with current foreign literature, and thus more readily understand the anatomical contributions of other nations. But he knows quite well that in his student days he is aiming to equip himself for the practice of medicine and surgery, and not for the specialised career of a pure anatomist—a point which some of his teachers seem to overlook. Again, he is beginning to know that the B.N.A. is not a universal anatomical language, but is essentially a German-made code of somewhat restricted usage. He also knows, from the article already mentioned, that in its present form it is not likely to be the permanent code of English-speaking countries. The student is, in fact, beginning to think that he has not been sufficiently considered in introducing these changes; and there are already signs that he will have to be reckoned with in the future by the makers of books. It was the commercial demands of other markets that gave us the B.N.A. in our text-books; but it may be that the voice of the British student will yet determine the language of the anatomy he wishes to read. In the Charing Cross-road medical books are sold second-hand to London medical students. It is not the latest editions that are on sale there: and the demand for the older editions in the Charing Cross-road, equally with the demand for the latest editions in New York, must be taken into account if considerations of publishers' successes are to determine our anatomical terminology.

ANGLO-AMERICAN CONTINENTAL MEDICAL SOCIETY.—The annual dinner of this society was held in Paris on Oct. 18th at the Hôtel Majestic, Professor Robert Saundby, of Birmingham, being in the chair. The guests were Dr. du Bouchet, Dr. Castex, Dr. Desfosses, Dr. Galezowski, Dr. Lutaud, Dr. Field Robinson, and Dr. Mowat, and among the members of the club present were Dr. Eugene Dupuy, Dr. Koenig, Dr. Leonard N. Robinson, Dr. A. A. Warden, Dr. Magnin, and Dr. Robert Turner (honorary secretary). After the loyal toasts had been duly honoured the chairman proposed the "Prosperity of the Society," pointing out that it constituted a valuable link among Anglo-Saxon physicians practising on the Continent and the Mediterranean littoral, and served to maintain not only a friendly bond of union but the professional traditions which are honoured alike in England and the United States. The toast was responded to by Dr. Leonard Robinson, who also proposed the health of the honorary secretary.

Annotations.

"Ne quid nimis."

DR. HIDEYO NOGUCHI'S DEMONSTRATION.

AT a special meeting of Fellows of the Royal Society of Medicine on Monday, Oct. 20th, Dr. Hideyo Noguchi gave a most instructive demonstration of his researches on the spirochætæ and on certain bodies which he had found in the lesions of poliomyelitis and of rabies. The most interesting matter discussed by Dr. Noguchi was the statement that he had found the treponema pallidum in the brain of patients suffering from general paralysis. In the first series of 70 cases he had demonstrated their presence in 14 instances, and in a second series of 130 cases in 36 instances. The term parasyphilis has been used to denote those conditions which, although not directly syphilitic, are dependent upon its poison. Amongst the chief of these is general paralysis. Dr. Noguchi exhibited some microscopic specimens and lantern slides which showed very clearly the presence of the spirochætæ in the brain tissue. Further, he had been able to effect the transmission of the treponema pallidum from the brain of a general paralytic to the rabbit; also he had been able to produce symptoms and lesions resembling general paralysis in the rabbit by means of an intracerebral or subdural inoculation with treponema pallidum. As a result of these investigations it may be questioned whether general paralysis can any longer be regarded as a "parasyphilitic" condition, but should be placed amongst syphilitic affections, although it has not yet been definitely proved that all cases of general paralysis are due to the same origin, and it is probable that other factors are necessary in order that the brain can be attacked by the spirochætæ. Dr. Noguchi also showed lantern slides indicating that the spirochætæ multiplied by longitudinal fission. He further drew attention to the cutaneous reaction test for syphilis furnished by "luetin," which he considered superior to the Wassermann reaction. Another part of Dr. Noguchi's demonstration which caused much interest was his description of the "granules" which he found in pure cultures of the virus of rabies. In 1903 Negri described certain bodies which he found included in the cytoplasm of the nerve cells or in their branches, or occasionally lying outside them. Such bodies are found in the great majority of cases of rabies in the dog. Dr. Noguchi said that in the rabbit Negri's bodies could not be found, but "granules" could be detected. He showed a series of lantern slides showing Negri's bodies and also "sporulation" forms, which in cultures gradually grew larger and finally broke down into granules precisely similar to those which he had previously seen in cultures. He believed these "granules" to be the causal agent of rabies, although he was uncertain as to their exact nature. These observations appear to support those of Williams and Lowden,[1] who were able to demonstrate the presence of Negri's bodies at a very early stage, and considered them to be specific to rabies, and stated that they are found in large numbers in fixed virus; they further pointed out that very minute germs, barely visible under a 1500 diameter magnification, had been discerned, which were of such great plasticity that they readily passed through the comparatively large pores of Berkefeld filters; they looked upon these as living organisms and probably as belonging to the protozoa. Dr. Noguchi has brought this investigation to a most interesting stage, and further developments will be awaited with interest.

[1] Journal of Infectious Diseases, Chicago, 1906, iii.

INSURED PATIENTS AND PROPRIETARY MEDICINES.

IN connexion with the administration of medical benefit under the Insurance Act, Local Insurance Committees are considering a question of no little difficulty. The problem they are called upon to solve is that of keeping the drug bill within the limits of the allotted amount without encroaching too much upon the prerogative of the prescriber. In some districts Local Committees find that unless the practitioners prescribe in a more economical way there will not be sufficient funds to pay the pharmacists in full and the committees are taking steps to discourage the prescribing of proprietary medicines. In a number of cases, in fact, lists have been drawn up of drugs and preparations which chemists may not charge to the Insurance Committees and which, therefore, panel doctors may not prescribe for insured patients. In other cases Insurance Committees without having given warning that certain articles should not be supplied have disallowed the charges for such drugs when the chemists have sent in their bills. Not unnaturally medical practitioners resent this action, and it is obviously unreasonable on the part of the committees to refuse to pay chemists for *bonâ fide* medicines which, in the absence of any warning to the contrary, they have supplied to an insurance practitioner's order. The kind of proprietary articles referred to are not, of course, the popular class advertised to the public, but branded products, for the most part of known composition, which are claimed to be, and often are, superior in one way or another to preparations of a similar nature but non-proprietary. Such branded products are regularly prescribed by practitioners in private practice, and the class includes some of the most valuable drugs known in medicine; on the other hand, the class comprises many preparations which are not materially superior to cheaper compounds of the British Pharmacopœia or other standard formularies. It is, however, obviously impossible for Insurance Committees to define those articles which are better than non-proprietary drugs and those which are not better, and in the circumstances the only proper course for the committees is to suggest to practitioners that before prescribing proprietary compounds they should take reasonable means to satisfy themselves that they are superior to similar products which are not sold under branded names. A short time ago the Scottish Commissioners, at the request of some of the Local Committees, issued a memorandum which now serves as a guide to the committees in Scotland. It is understood that the English Commissioners are considering the desirability of following this example. The Commissioners for Scotland in their memorandum divided "proprietary medicines" into two broad but mutually exclusive groups. One group comprised medicines the composition of which is not publicly disclosed—that is to say, those which are commonly known as "patent medicines" or "secret remedies." The second group comprised medicines the composition of which is made public without reserve, though the preparation may be made up in a particular form or sold by a special name. They expressed the opinion that preparations included in the first group were not in general "proper and sufficient drugs" in the sense of Section 15 (5) of the National Insurance Act, and should not be prescribed for or supplied to insured persons. On the other hand, they expressed the opinion that those in the second group should be supplied by chemists where ordered by panel doctors. The Scottish Commissioners added that they assumed that practitioners

would not order medicines in the second group unless they looked upon them as possessing recognised advantages over pharmacopœial or other non-proprietary preparations of similar composition. The Local Committees are not bound to act upon these suggestions, but in practice they are doing so, and it is very desirable that there should be more uniformity in the policy of English committees. It is obviously in the interests of insured persons that there should be no unreasonable interference with the duties of the doctor towards his patient.

CHILDBIRTH IN THE EIGHTEENTH CENTURY.

IT can scarcely be disputed that the eighteenth century held semi-barbaric views as to the puerperal state and wifely duties in general. When, for instance, Cæsarean section had to be resorted to, the mother was, when necessary, sacrificed in place of the child, whereas nowadays the mother, as a possible producer of further offspring, is spared and the child is sacrificed. The theory of the old medical jurisprudence was that everything should be done to safeguard the life of an heir; and a mother, as not being an heir, was as often as not the victim of her infant's claims to a succession. She was the slave of testamentary dispositions, and at times was compelled by these to give birth to her baby at some stated place. Often, again, during pregnancy she was made to suffer bitterly in the cause of dynastic or family feuds; and often, when no feud existed, she was bandied about during the period of gestation in a manner horrifying to modern notions of decency. It speaks volumes for our ancestresses that they apparently acquiesced with much cheerfulness in these arrangements. A historic document was issued in 1737 by George II. to all foreign ambassadors in England and to all British ambassadors abroad. Republished for the benefit of the public, it appears as the very scarce pamphlet entitled "Letters and Messages, that passed between the King, Queen, Prince, and Princess of Wales; on occasion of the Birth of the Young Princess." It was sold to a generation in sympathy with Frederick, Prince of Wales, for the sum of 6*d.*, and presents a perfect picture of our ancestors' attitude towards a mother *in posse*. Late in July, 1737, the Princess of Wales, wife of the notorious, but not very wicked, Prince Frederick, had been to all appearances seized with labour pains and had been hurried at dead of night from Hampton Court to St. James's in order that she might become a mother in London. The roads were rough, footpads swarmed in the neighbourhood of what is now the Albert Memorial, the carriages even of the great hung on uneasy springs and ran on heavy iron tyres. Yet despite all this, Prince Frederick endangered his consort's life in order probably that the child might be born away from the Court and that the witty Queen Caroline might not be present at its birth. The supposition is that of Lord Hervey, whose fascinating memoirs have been so often quoted by Leigh Hunt in his description of the goings on at Kensington Palace when Queen Caroline resided there ("The Old Court Suburb"). On arrival at St. James's the beds were found to be unaired, and the only lady in attendance was a reputed mistress of the Prince. The pains, however, abated, and a return was made to Hampton Court. This happened on a Monday night or on a Tuesday morning. On the Friday following the pains returned, and again the Princess was rattled to St. James's, only to return to Hampton Court on a Saturday. On Sunday, however, there could be no doubt about her condition. She was got to London and gave birth to a princess, sister of the future George III. The Prince, writing in the curious Court French of the time, avers that there was no midwife at Hampton Court, and that neither Doctors Hollings and Broxholme nor Mrs. Hollings had diagnosed the near approach of the event during the Princess of Wales's flying visits to town. The King, however, was vastly incensed. He thought he saw through these excuses, and turned his son, his daughter-in-law, and their baby out of his London palace. Instances of babies untimely born are legion, for the ladies of the eighteenth century took risks with their eyes open and with a lightness of heart, now only to be equalled among gipsies or proletarians. In 1777, for instance, the wife of a naval officer, afterwards one of Nelson's admirals, narrowly escaped giving birth to her daughter in a theatre at Cork, where her versatile spouse was acting in the *Duenna*. He had a passion for the stage as well as for war at sea. "In the middle of the entertainment," according to the unpublished memoirs of the daughter in question, "my mother was taken ill, and escaped as quickly as possible and got home only a few doors distant, but no one was in to open the door. My father, guessing what had occurr'd, ran home in all his disguise and broke the door open before the servant could be awoke from a fainting fit into which she had fallen by reason of the heat." How our ancestors were born, and how they died, would form a fascinating volume, but mourners and survivors, from various motives, are always reticent as to these desirable data. Even in the case of famous medical men the cause of death is rarely mentioned. We know that John Hunter died from heart disease, but what did the great Joseph Henry Green die from when, like some hero of antiquity, he said "Stopped!" after his pulse had actually ceased to beat? If these deaths of famous men be obscure, how much more impenetrable are the circumstances of their births.

THE PERIOD OF GESTATION.

THE determination of the normal period of gestation is a matter of considerable practical importance, but up to the present time no very definite knowledge can be said to exist on this point. The problem is discussed by Dr. D. Berry Hart in the current number of the *Edinburgh Medical Journal*. An obvious difficulty is encountered at the outset of any inquiry on the subject in that the *terminus a quo*—the moment when the ovum is fertilised by the spermatozoon—cannot be accurately recognised, for it is almost certain that the male element may remain alive in the female passage for some days, while it is exceptional in the case of human beings to be able to trace a pregnancy to a single act of insemination on a known date. Hence it is necessary in the case of mankind to reckon the probable duration of pregnancy from a somewhat arbitrary date, that of the beginning or end of the last previous menstrual epoch. In the case of the domesticated animals greater accuracy is obtainable as to the time of coitus, and data are available as to the duration of pregnancy in both cattle and sheep. Regarding the latter Tessier's observations deal with 912 ewes, and it appears that labour took place in these between the 146th and 157th days after impregnation, a very large majority of all the births taking place between the 149th and 153rd days. If the figures are reduced to a curve in which the births form the ordinates and the dates the abscissæ a fairly symmetrical figure is produced, in which the axis of the curve corresponds with the 152nd day. It seems probable that in the ewe only one ovum is shed at a time, and that some, at all events, of the variation in the actual date of the occurrence of labour is due to differences in the time taken by the spermatozoon to meet the ovum. It may be noted that as the *terminus ad quem* is the actual birth, and the process of labour may be prolonged, another variable

factor is introduced at the end of the calculation. In the case of cattle observations were recorded by the fifth Earl Spencer, which show a range of time extending from the 220th to the 313th day after insemination, but as, according to Dr. Hart, calves are to be regarded as premature before the 260th day, the period of variation is rather less than this. If these figures are also reduced to a curve, again a fairly symmetrical figure is produced, the maximum number of births lying between the 284th and 285th days. It seems legitimate to conclude that, as might be predicted in a vital process, the duration of gestation is not a rigidly fixed period, while the greater range of variation in cattle as compared with sheep may be explained by assuming that in the former two ova may be shed at intervals of three weeks, and that either one or other may be fertilised at any particular act of coitus. Figures as to the duration of human pregnancy have been collected by several observers, notably by von Winckel and by Reid, who calculated respectively from the first and last days of the preceding menstrual period. Curves prepared from their data again show fair symmetry, the range found by von Winckel being from the 258th to the 313th day, and by Reid from the 252nd to the 316th. The maximum number fell in the former author's experience between the 282nd and 289th days after the first day of the last menstruation; in that of the latter between the 276th and 279th day after the cessation of the period. It is clear that we are not in a position at present to predict with any accuracy the probable duration of an individual pregnancy, and that further observations are desirable. Dr. Hart suggests that "more exact results might be obtained officially under the Insurance Act" if the dates of beginning and end of the last period of menstruation and the date of labour were recorded on the official cards which have to be prepared in order to establish a claim to maternity benefit.

ALTITUDE AND BLOOD VOLUME.

THE increase in the number of red blood corpuscles in animals and man living at high altitudes is a well-established fact. Animals living in Mexico at 3700 metres have double the normal number of red corpuscles, and Viault found 6 to 9 millions per cubic millimetre in Peruvians dwelling at over 4000 metres. Müntz kept rabbits in the summit of the Pic du Midi for seven years, and found that the iron percentage of the blood increased from 40·3 on the plain to 70·2 milligrammes at the summit. There is also an increase in the hæmoglobin percentage in the blood. These results have been ascribed to various causes. This week we print a communication on the Effect of Altitude on Blood Volume by Professor G. Dreyer and Dr. E. W. Ainley Walker. From this it appears that there are also definite changes in the blood volume, which follow definite laws. Bohr observed that diving birds which remain several minutes under water have double as much blood as ordinary birds. The authors have analysed the "almost inexhaustible wealth" of the information recorded by Abderhalden from observations on rabbits kept at St. Moritz from four and a half to eight weeks, 1856 metres above sea level, in 1902, and they are led to the conclusion that the change of volume which occurs with a particular change of barometric pressure is proportional to the area of the body surface in different individuals of a given species. The blood volume is diminished by an amount exactly proportional to their body surface. In the St. Moritz rabbits the diminution of blood-volume was nearly 11 per cent.; the hæmoglobin shows an increase and the number of red cells a parallel increase. The increase of the hæmoglobin reaches 11·7 per cent. of the total hæmoglobin. This shows that there is an active new formation of blood during a temporary residence of some weeks at high altitudes. The increased oxygen capacity is as regards one half due to concentration of the blood and as to the other half to new formation of hæmoglobin and red cells. In the early days of the sojourn the whole change is due to diminution of the blood volume. The authors are not in agreement with some of the conclusions of Douglas, Haldane, Henderson, and Schneider from their observations made on Pike's Peak (3386 metres). When the St. Moritz rabbits were brought back to Basel the blood volume reached the Basel normal in four days, and after the third day and onwards the daily fall in oxygen capacity ran parallel to the fall in percentage hæmoglobin. A formula is given for the calculation of the volume of blood in mammals, and the authors find the same formula applicable to certain birds which they name. This relation between blood volume and surface area of the body of mammals and birds is related to the fact that they are homoiothermal animals or animals of constant temperature. In poikilothermal animals, such as a frog and lizard, the blood volume is neither proportional to the body surface nor to the body weight. The blood volume increases as the animal grows heavier, while in warm-blooded animals there is a steady diminution. Professor Dreyer and Dr. Ainley Walker also find that the ratio of the weight of the heart muscle—in different species—to the total oxygen capacity is approximately constant from species to species in a number of instances. One of the other interesting results is the comparison of the hare and wild rabbit to show the importance of life and muscular activity as a factor in determining the amount and the distribution of the hæmoglobin in the body. Animals with a high hæmal hæmoglobin have usually dark-coloured muscles and a high hæmoglobin percentage in their skeletal muscles; those with a lower hæmal hæmoglobin percentage have pale muscles. The hare as compared with the wild rabbit has remarkable speed, greater endurance, higher hæmoglobin percentage, darker muscles, a heavier heart, and a larger aorta. The hare has more than double the amount of blood, 30 per cent. more hæmal hæmoglobin, and about three times as much heart muscle as a wild rabbit. These and other facts recorded in this communication offer fruitful suggestions for more extended investigation into the important question of blood volume.

AN INSTRUCTIVE MISTAKE.

ONE of the valuable features of the *British Journal of Surgery* is a series of cases published anonymously under the heading of "Instructive Mistakes." In the following case a distended saccule of the bladder was mistaken for a cæcal volvulus. A man, aged 79 years, in fair general health, who had not suffered from any urinary symptoms, was seized with abdominal pains and urgent vomiting, which was copious and projectile. The pains were paroxysmal and referred to the lower abdomen, especially to the right iliac fossa, where a firm elastic swelling could be seen and felt. During the pains it hardened palpably. It was only relatively dull on percussion, and there was no obvious hypogastric fulness. The bowels had acted regularly, and after enemata fæces and flatus ceased to be expelled. Purgatives could not be retained on the stomach and therefore failed to act. The prostate was much enlarged, but there was no cystitis. As urine was passed occasionally and instrumental aid did not appear to be required no catheter was passed. There was no general abdominal distension or tenderness. Volvulus of the cæcal region was diagnosed and laparotomy was performed, when the swelling was found to be a large distended saccule of a deformed bladder. The whole length of the intestines was examined methodically without finding any obstruction. An elbowed catheter was passed and the

swelling disappeared and this instrument was used daily in the subsequent treatment. The wound healed by first intention. After the operation the vomiting continued, with occasional hiccough, but was not so urgent as when the bladder was distended. Purgatives acted at intervals satisfactorily, and the bladder was washed out daily. The general condition did not improve, and death took place six weeks after the operation from uræmic coma. Had a catheter been used before the operation, the distended and deformed bladder would not have been mistaken for a volvulus. An examination of the urine for low specific gravity and diminished excretion of urea would have led to the conclusion that the vomiting was uræmic, doubtless produced by chronic retention of urine and atrophy of the kidney, the result of back pressure maintained by the prostatic hypertrophy.

PAROXYSMAL ŒDEMA OF THE LUNGS.

FOUR cases of a condition which, though not very rare, has received scant attention in the text-books—paroxysmal œdema of the lungs—are reported by Mr. C. E. S. Flemming in the *Bristol Medico-Chirurgical Journal* for June. The pathology of this condition is somewhat obscure, but its clinical features are very definite. Mr. Flemming gives the following excellent description. The attack usually commences with some irritation in the throat, tickling, and a feeling of dryness with slight cough. There is a fear that something serious is happening; in later attacks this fear amounts almost to terror. The patient cannot, dare not, lie down. Breathing at once becomes rapid and the face looks anxious and pale. The skin is cold and moist. The cough grows more distressing, and frothy, coagulable fluid, frequently blood-stained, is expectorated. The chest is rapidly filled with râles. The pulse is small and quick. The breathing becomes more distressing, and the expectoration at times becomes more profuse. This condition lasts from half an hour to an hour and a half. Gradually the breathing becomes deeper, easier, and quieter, the pulse fuller and less rapid, and the skin resumes its normal colour and warmth. The patient is thankful for the relief, but too apprehensive of recurrence to sleep soundly. Air now enters the chest freely, but râles persist over the greater part of one or both lungs. In one or at most two days all signs of œdema disappear, and the attack has passed off to return, it may be in a week or two or not for months. The onset is nearly always at night, within two or three hours of bedtime. Mr. Flemming has never been able to satisfy himself as to an exciting cause. An attack was generally attributed to one of those things which happen so frequently that they were possibly mere coincidences—e.g., worry, excitement, a cold wind, a hot day, fatigue, some food that might have disagreed, a crowded room, going upstairs. The four patients were equally divided between the sexes. The youngest was a woman, aged 54 years, and addicted to alcohol. She had a high-tension pulse, and a trace of albumin in the urine. The first attack passed off rapidly. A month later another occurred, and although the lungs cleared up quickly the general condition was not good, and she remained weak and the pulse continued fast. Ten days after the second attack the lungs were quite clear and she seemed decidedly better. Mr. Flemming had not left the house two minutes when he was called back and found her struggling for breath. There were râles all over the chest, and watery fluid was freely expectorated. She became deeply cyanosed and died in two hours, apparently from heart failure. Another woman, aged 70 years, was the hard-working wife of a labourer. She had mitral incompetence for six months and thickened arteries, but no albuminuria. Typical attacks occurred at intervals of a few weeks. After a few months she became distressed and drowned herself. In a man, aged 68 years, there were an apex beat in the nipple line, thickened arteries, a pulse tension of 180, a good deal of dyspnœa, and palpitation on exertion. He was a heavy smoker and eater. Two paroxysms of œdema occurred at an interval of about a month, and the second was fatal. The longest case occurred in a man aged 71 years. For two or three years he had shown various evidences of arterial degeneration. The blood pressure was 140 and the urine normal. For two years the attacks occurred at irregular intervals, and he eventually died of heart failure. In this case the attacks were followed by dulness over the lower half of the right chest. The condition present in these cases is frequently termed acute œdema of the lungs, but paroxysmal œdema is a better name, as it is thus distinguished from the acute œdema of pneumonia, influenza, mitral disease, and Bright's disease. Mr. Flemming points out that in its mode of onset and in the general appearance of the patient the condition bears a curious resemblance to cardiac asthma, but is much more alarming. Various theories have been advanced to explain it. The most plausible is that the left ventricle fails to contract properly, so that with every beat it passes on less blood than the right. The result is that the pulmonary vessels rapidly become engorged. Professor Welch produced acute œdema in the rabbit's lungs by squeezing the left ventricle and so paralysing it. As the descriptions given show, there is clinical evidence of failure of the left ventricle. With regard to treatment, Mr. Flemming found that nitrites in any form were useless, which the view of the pathology given explains. Hot fomentations gave some relief, but did not seem to cut short an attack. Of the value of stimulants there was no evidence. Oxygen given freely gave decided relief and seemed to shorten the attack. But nothing gave such relief as hypodermic injection of morphine and atropine.

MOONLIGHT AND DECAY.

THE observation that the rays from the moon favour putrefaction detracts from the romance which has long been associated with moonlight. It is an old tradition that to sleep in the moon's rays was a dangerous proceeding, and there is such a thing as "moonblink," a temporary blindness said to be due to sleeping in the moonlight of tropical climates, while some observers have reported a devitalising action of the moon's radiations on vegetable life. There is even quoted a death the cause of which was officially stated to be exposure to moonlight. Apparently the food most seriously affected by the moon's radiations is fish, and seemingly trustworthy statements have been made as to the ill-effects produced in persons who had partaken of fish which had been freely exposed to moonlight. Mr. E. G. Bryant, B.A., B.Sc., writing in a recent number of the *Chemical News* from Port Elizabeth, South Africa, suggests that a possible explanation of these phenomena, assuming them to be true, might lie in the well-known fact that the light of the moon, being reflected light, is more or less polarised, and possibly polarised light may exert a peculiar chemical action. Subsequently, polarised light was obtained from a powerful metallic filament lamp, the light being polarised by means of a pile of sheets of plate glass backed with silver and placed at the correct angle. The experiments showed certain marked results when fish was submitted to the polarised light obtained in this way, although it is probable that stronger effects would be obtained with a more powerful source of light. When two slices cut from the

same fish were hung, one in the direct light and the other in the polarised beam, the latter invariably began to decompose before the former, though the temperature of the polarised beam was several degrees lower than the direct light. There were indications also in the case of other perishable food substances of a tendency to decompose when they were bombarded with polarised light. The question is worth further investigation, and there should be little difficulty in pursuing such a line of research. There are so many influences ascribed to moonlight that it would be of obvious interest to have some scientific evidence tracing a definite action to the rays. It would be curious to find that such terms of obloquy as "moonstruck," "mooney," and "moonshine" were after all not entirely empirical.

INTUSSUSCEPTION OF THE STOMACH AND DUODENUM DUE TO A GASTRIC POLYPUS.

THE case recorded by Mr. Henry Wade of Edinburgh, in *Surgery, Gynæcology, and Obstetrics* for August, is of singular interest, both in respect of its nature and the successful issue of the treatment adopted. The patient, a married woman aged 48, being seized with acute abdominal symptoms in May, 1911, was operated on in the Edinburgh Royal Infirmary; the gall-bladder was emptied of stones and drained, and an acutely inflamed appendix was excised. She was well for some weeks after a normal post-operative convalescence, but had to return to hospital in August, 1911, suffering from severe epigastric pain associated with vomiting. This attack passed off, and she went home again, to find that any freedom of diet brought on similar symptoms, and that in spite of precautions pain and vomiting were apt to recur. During 1912 her troubles became aggravated and she lost flesh; at this time a fulness was noticeable in the epigastrium, with a peristaltic wave travelling from right to left, which was interpreted as indicating obstruction to the transverse colon by an omental band. Her general state at length became so precarious that a laparotomy was undertaken. This discovered the nature of the swelling that had been palpable; it was a recent intussusception distending the uppermost six inches of the jejunum. This was eventually found to owe its origin to a pedunculated myoma of the gastric wall, which had been carried through the pyloric ring into the duodenum, dragging with it a substantial portion of the wall of the stomach, and in the duodenum it had stuck fast. The consequence was that the duodenum, which was abnormally mobile, had been forced on into the upper jejunum. It was easy enough to reduce this intussusception, but the tumour was dislodged from its impacted position within the duodenum with some considerable difficulty. Eventually this was accomplished, and the tumour, which was as large as a duck's egg, was successfully removed, together with the portion of the gastric wall to which it was attached. The subsequent history of the patient's career is not detailed, but Mr. Wade claims that this case is the only one on record in which operative treatment of a gastro-duodenal intussusception was successful. A review of the literature of the subject shows that a majority of benign gastric tumours become pedunculated sooner or later, constituting intragastric polypi. These, if situated near enough to the pylorus, cause an intermitting pyloric obstruction with the appropriate symptoms. A natural cure may result, the polypus becoming detached, and in the intervals between the attacks the patient is in fair health; but, nevertheless, if the presence of a gastric polypus in the central portion of the stomach should ever be diagnosed it should be removed by operation. Whether such a diagnosis has ever been made does not appear from Mr. Wade's summary of the records, but the probabilities of such a condition being present in any given case of pyloric obstruction are so remote that he would be a bold man indeed who made the diagnosis of gastric polypus unless he held the tumour in his hand.

METHOD FOR DETERMINING THE TOXICITY OF COAL-TAR DISINFECTANTS.

Dr. Worth Hale, assistant pharmacologist in the United States Public Health Service, has submitted a report on a method for determining the toxicity of coal-tar disinfectants, together with a report on the relative toxicity of some commercial disinfectants.[1] The method consists in injecting a series of mice with varying amounts of the substance until the least fatal dose is determined. Mice of the same lot are similarly injected with dilutions of pure phenol and the least fatal dose per gramme of body weight determined as above. The dose thus obtained with pure phenol is considered unity, and the least fatal dose of the substance in question is estimated as a percentage of this. The determination of the toxicity coefficient by this method is a continuation of the work done by Dr. T. B. McClintic in estimating the phenol coefficient of a number of commercial disinfectants. Proceeding on the lines indicated, Dr. Hale found that all of the disinfectants that were alleged to be harmless or were labelled non-poisonous are toxic towards mice, and other experiments showed them to be poisonous to guinea-pigs and cats in approximately the same degree. He holds that the same relation probably exists for man, and statistics of human poisoning by compounds of this nature give confirmatory evidence of their inherent toxic properties. Of the disinfectants claimed to be non-poisonous examined by Dr. Hale were tricresol, with 90 per cent. toxicity compared with phenol at 100 per cent.; lysol, 56 per cent.; zenoleum, 19 per cent.; Pearson's creolin, 18 per cent.; and chloronaphtholeum, 16 per cent. The coal-tar disinfectants of the phenoloid group were found to be considerably less toxic than either phenol or the cresols. But they are not harmless, non-poisonous substances, for they have a toxicity equal to from 15 to 20 per cent. phenol.

TREATMENT OF PYORRHŒA ALVEOLARIS.

THE valedictory address of the retiring President of the Odontological Section of the Royal Society of Medicine alludes, among other matters, to one which at times becomes a burning question between the dentist and the physician—the need for radical treatment of pyorrhœa alveolaris. Mr. P. Sidney Spokes points to the divergent views prevailing in his own profession as to this trouble. Some dental surgeons maintain that it is necessary to extract all teeth which show any separation of the gum around them, owing to the danger of future stagnation of food remnants and resulting infection, while others hold that even when there is actual pyorrhœa of moderate extent extraction of all the teeth, as often practised, is unjustifiable. We hope that the attention drawn to the matter will lead, at all events, to agreement among dental practitioners as to the cases in which radical operation is ideally necessary from a dental point of view; but another question which is of more immediate medical importance may arise as to the influence of total, or almost total, removal of the teeth on the general health of a patient and on the course of some constitutional disease. It is in relation to cases of pulmonary tuberculosis that the question becomes most acute, since in recent years much stress has been laid on the evil effects of pyorrhœa upon sufferers from this affection; and it is customary to recommend a thorough dental overhaul before residence in a sanatorium.

[1] Bulletin No. 88, Hygienic Laboratory, Washington, D.C., pp. 46.

it may then happen that the dentist advises extraction of all the teeth, a procedure to which the patient may not unnaturally raise objection; and it falls to the lot of the physician either to insist on the need for this radical measure or to place himself at variance with his dental colleague. Now, not only may the actual procedure involve a serious tax on the patient's strength when already ill, but in the case of a poor person the provision of artificial dentures may be financially impossible. Yet while in an edentulous condition he may be unable to take the amount of food which is requisite for his subsistence and recovery. Time will doubtless bring about agreement as to the course which should be pursued, but meanwhile it seems probable that a tuberculous subject is better off with a small amount of pyorrhœa and an adequate supply of teeth to masticate his food than with a perfectly clean set of gums and no teeth to eat with.

TUBERCULOSIS IN TRINIDAD AND TOBAGO.

A COMPARISON of the incidence of pulmonary tuberculosis in various parts of the world is always of interest and leads to increased knowledge of the disease, especially as regards its virulence and mode of spread amongst the inhabitants of different countries. At the West Indian Inter-Colonial Tuberculosis Conference, held in Trinidad in March of this year, Dr. George H. Masson read an interesting paper on Tuberculosis in Trinidad and Tobago. He stated that tuberculosis, mainly of the respiratory organs, is widely prevalent in the colony of Trinidad and Tobago. In Trinidad its incidence is highest in the county of St. George, which is situated in the northern division of the island and includes the town of Port-of-Spain. He considered the principal cause of the wide dissemination to be direct contagion, resulting from the multiplicity of households which are both overcrowded and infected. He drew attention to the fact that the same active causes of tuberculosis denounced by Sir Alexander Tulloch (an army medical inspector) and others in the early part of the last century still persist, and are responsible for the same excessive prevalence of the disease reported upon in days when preventive medicine was still unknown to science and the bacillus of Koch as yet undreamt of. In the absence of direct measures for the control of tuberculosis and for the eradication of the causes which have favoured its spread in the colony during the last century the carriers of infection have become very widely disseminated among the population; and owing to the method of living each sufferer from tubercle is successful in breeding fresh carriers for the propagation, if not the perpetuation, of the disease, so long as there is continued delay in adopting the proper methods of defence. Another factor of great importance is the special susceptibility to tuberculous infection of the negro race from which the majority of the population has sprung. We support Dr. Masson in the view that the recognition of this proneness of the negro race to infection is an important matter which should further urge the responsible authorities to make efficient use of the weapons which medical science has placed in their hands to prevent the continued deterioration of the labour efficiency of the masses of the people whose health and strength are assets of great value in agricultural colonies. Dr. Masson believes that besides the question of racial susceptibility there also exists in the colony a general lowering of resistance to lung affections common to European and native alike. This he ascribes to the climate, in which, as in many other tropical countries, excessive heat and a high degree of atmospheric humidity appear to have a prejudicial influence upon the respiratory organs. As regards the actual prevention of tuberculosis in the country, there are as yet no official regulations in force for dealing with that question, but in 1905 the Trinidad Association for the Prevention and Treatment of Tuberculosis was founded, and this association is doing excellent work, as is shown by the eighth annual report which has recently been issued. It is earnestly to be hoped that some working plan for attempting to stamp out tuberculosis from the colony will be devised and that official aid will be forthcoming to render the necessary steps feasible.

WE much regret to learn, as we go to press, of the sudden death of Dr. Lucas-Championnière, on the afternoon of Oct. 22nd, during a meeting of the Institut de France.

THROUGHOUT the medical profession the greatest sympathy is felt with Sir Almroth Wright on the tragic death, following an accident, of his eldest son at Dublin on Sunday last.

Surgeon-General Sir R. Havelock Charles, G.C.V.O., will present the prizes at the Royal Army Medical College, Grosvenor-road, S.W., on the conclusion of the 106th session, on Wednesday next, Oct. 29th, at 4 P.M.

THE fifth Norman Kerr lecture of the Society for the Study of Inebriety will be delivered by Sir Thomas Clouston, M.D., on Monday, Nov. 3rd, at 4 P.M., in the Hall of the Royal College of Physicians, Queen-street, Edinburgh. The subject of the lecture is the Clinical Aspects of the Study of Inebriety.

THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

The Local Government Board and the Treatment of Tuberculosis.

A LETTER from the Local Government Board in reply to a request by the London County Council for a statement of the views of the Board with regard to the administration of treatment of tuberculosis in London[1] was reported to the Council on Oct. 21st. The Board stated that it still held the view previously expressed that the London County Council should be the tuberculosis authority for the metropolis, and that through the Council all the various agencies should be properly coördinated to form parts of a complete scheme of institutional treatment for this disease. It was essential that the dispensary arrangements should be closely related to the preventive work which it was the duty of the sanitary authority to carry out, and there were many advantages in regarding the metropolitan borough as the unit area for dispensaries. Accordingly, the Board had invited the metropolitan borough councils to provide, or arrange for the provision of, these institutions. The Board agreed with the view contained in the resolution of the County Council that all possible use should be made of existing institutions; in the Board's opinion any hospitals or other voluntary institutions which were to be recognised as forming part of the tuberculosis scheme for London should be willing to work in close coöperation with the local authority. The Board agreed with the County Council in thinking that as far as practicable arrangements should be made for referring any specially difficult cases from a municipal or voluntary dispensary to some general or special hospital. In particular, the Board desired to learn what general rules the County Council would suggest should be observed in the working of the various local dispensaries so that the work performed by these institutions might properly form part of the whole scheme for London.

As regards residential accommodation, the Board considered that upon the County Council should rest the responsibility of securing that the necessary accommodation

[1] THE LANCET, August 23rd, p. 585.

was available. Much of this accommodation could, no doubt, be provided economically and efficiently by the Metropolitan Asylums Board in pursuance of an agreement between the London County Council and that body. It might also be possible that the County Council could arrange with some of the great London hospitals to provide beds for special cases. So far as insured persons and their dependents were concerned, agreements with the Metropolitan Asylums Board might be made in pursuance of the provisions of Section 39 of the National Insurance Act, 1913. As regards the rest of the community, the Board was disposed to the view that arrangements with the Metropolitan Asylums Board could also be made by the County Council under the provisions of Section 3 of the Public Health (Prevention and Treatment of Disease) Act, 1913, and Section 80 of the Public Health (London) Act, 1891. The accommodation to be provided was to serve both the insured and the non-insured, and the London County Council should consult with the London Insurance Committee as to the arrangements required for insured persons and as to the payments which the London Insurance Committee would make for the services provided for such persons.

The Departmental Committee made the suggestion that each area should have a chief clinical tuberculosis officer who should also act as medical adviser to the Insurance Committee of that area, and the Board suggested that the London County Council should carefully consider whether this arrangement might not be carried out in the case of London. This officer might also, in consultation with the other medical men concerned, supervise and generally direct the selection of cases to receive residential treatment.

As regards the financial arrangements to be made, it seemed to the Board desirable that the cost of the scheme, at any rate to a large extent, should be borne by London as a whole. Inasmuch, however, as the dispensaries were to be provided locally, some proportion of the cost of providing these institutions should be charged locally. It would simplify matters if, as regards the treatment of insured persons, the County Council were recognised as the providing authority for all the institutional treatment required, whether in dispensaries or other institutions, so that the London Insurance Committee could make one agreement with the London County Council in regard to all the services rendered to insured persons.

The Board stated that it would be happy to arrange for a further conference with representatives of the County Council if it should be considered that this would facilitate the formulation of a general scheme for the metropolis.

In some observations on the letter the Public Health Committee remarked that during the time the Council had been engaged in the preparation of a comprehensive scheme the Local Government Board, without reference to the Council, had approved local schemes prepared by the local sanitary authorities for the provision of dispensary treatment. It had thus been rendered very difficult, if not impossible, for the Council to organise a comprehensive scheme for London. In order, however, to avoid further confusion and inequality of treatment the committee thought the Council should agree, so far as dispensary treatment was concerned, to act to some extent on the lines suggested by the Board. All local schemes should be submitted to the Council in the first instance and, so far as uninsured persons were concerned, contributions in relief of local rates, subject to certain safeguards, should be made out of the county fund. In cases in which the Council disapproved of a local scheme and the local authority concerned refused to make amendments to meet the Council's objections the committee thought that the Council should make no contribution. Through the medium of finance the Council would be enabled to secure a measure of control which could now be obtained by no other means. The committee was unable at this stage to put forward even an approximate estimate of the expenditure which would fall upon the county rate if the proposal was adopted. From details available of the estimated cost of certain local schemes, the annual charge on the county rate might amount to upwards of £10,000.

The committee recommended the Council to pass the following resolution:—

That any comprehensive scheme for dealing with the treatment of tuberculosis in London shall provide for a contribution being made by the Council from year to year towards so much of the cost of the dispensary treatment of uninsured persons in the City of London and each metropolitan borough as would otherwise fall on the local rate, after taking into account the promised grant from the Imperial Exchequer, provided that such contribution (1) shall not exceed 50 per cent. of such cost; (2) shall in the first instance be made from a date to be fixed hereafter by the Council; and (3) shall be conditional upon the Council being satisfied with the local scheme in force in such area and to the arrangements and expenditure being annually submitted to, and approved by, the Council.

Consideration of the report was postponed.

Proposed Licensing of Lying-in Homes.

The Midwives Act Committee presented a further report as to the proposed legislation for licensing lying-in homes.[2] The committee stated that it did not appear necessary or desirable that the Council's powers of licensing should extend to Poor-law institutions or important hospitals or to a private residence in which a relative of the occupier was received for her confinement. Such places should be excepted from the proposed legislation. It was necessary also, having regard to the variety of institutions and places concerned, that the Council should retain the right to make certain other exceptions. There was still in force an Act of George III. which required certain lying-in institutions to be licensed by the justices in quarter sessions. This Act was practically obsolete, and it might be found necessary to repeal or amend it. In the event of the Council obtaining the power now sought the additional cost involved, in the first instance at any rate, would be small, and the appointment of one female inspector at a salary of about £100 a year would probably be sufficient.

The Council decided to promote legislation on the lines indicated above, and at the same meeting decided to take further steps towards the promotion of legislation for the control of massage establishments.[3]

MEDICINE AND THE LAW.

Sloman v. *The British Medical Association and Others.*

AT the recent Bedford assizes Mr. Justice Rowlatt with a special jury tried an action brought by Mr. H. Sloman against the British Medical Association, Dr. G. Butters, Dr. G. H. Goldsmith, and Dr. S. J. Ross. The case arose out of the proposed purchase by the plaintiff of the practice of a medical man at Bedford in 1907. Mr. Sloman went to Bedford from Edinburgh in order to complete the purchase and take over the practice, but an accountant, after going through the vendor's books, reported that the average income of the practice was less than the vendor had represented it in his advertisements, and the plaintiff declined to proceed further. He had, however, taken his furniture from Edinburgh, and he decided to remain at Bedford and endeavour to obtain a practice without purchasing that of the vendor or any other. This conduct was resented by the other medical men practising at Bedford. The central ethical committee of the British Medical Association was applied to, and the case finally came before the divisional committee, which found that Mr. Sloman had been justified in breaking off negotiations for the purchase of the practice in question, but that he had transgressed the recognised rules of the medical profession in immediately starting to practise in close proximity to the vendor. A resolution was then passed prescribing terms under which Mr. Sloman should either carry out the purchase or continue to practise in Bedford without interfering with the vendor's practice, and to these conditions Mr. Sloman agreed to submit. Four years later the branch committee passed a further resolution strongly condemning the action of Mr. Sloman in remaining and practising in Bedford, and a resolution that this should be sent to all the members of the division. Upon these resolutions and upon the proceedings immediately connected with them the plaintiff based an action in which he asked for a declaration that the resolutions were null and void, and that the passing of them was *ultra vires;* he also claimed damages for libel against Dr. Goldsmith and the Association and for slander against Dr. Butters. The defendants denied that the resolutions were *ultra vires*, and as regards the libel and slander pleaded privilege. After the plaintiff had been called in support of his case and had been cross-examined

[2] THE LANCET, August 23rd, p. 585.
[3] THE LANCET, August 9th, p. 411, and Oct. 18th, p. 1131.

Mr. Justice Rowlatt suggested that the parties might confer with a view to a settlement, which was accordingly done, the terms arrived at being that the resolutions objected to by the plaintiff should be expunged and taxed costs paid to him, together with a sum of £500. In stating the terms of settlement Mr. Hollis Walker, K.C., counsel for the defendants, pointed out that with regard to a condition which Mr. Sloman had accepted, to the effect that he should refrain for three years from treating any of the vendor's patients, it was not suggested that the plaintiff had not loyally fulfilled his undertaking. It should therefore be publicly known that he was entitled to practise on an equal footing with other medical men at Bedford, and to be met by them in consultation without restriction. Mr. Hugo Young, K.C., on behalf of the plaintiff, withdrew any suggestion that the defendants had been actuated by malice other than "legal malice" arising out of the circumstances in which the resolutions had been passed. He also withdrew, on behalf of Mr. Sloman, any imputation made by him to the effect that the British Medical Association could not be trusted to adjudicate fairly upon any matter coming before it.

ASYLUM REPORTS.

Dorset County Asylum (Annual Report for the Year 1912)—The number of patients in residence at the close of 1912 was 941, the highest number in the history of the institution. While two-thirds of the increase are due to a rise in the number of private patients, there has been a very exceptional increase in male county patients. There were admitted 119 cases during the year. The form of mental disorder among the admissions does not materially differ from recent years, there being again a high preponderance of the maniacal type, especially among women. On direct admissions the relative percentage of mania to melancholia among women is as 68 per cent. to 19 per cent., whereas on the male side the figures are 38 per cent. to 34 per cent. Dr. P. W. Macdonald, the medical superintendent, in criticising the Census reports, mentions that he had visited a cottage, and out of the family of seven had had no difficulty in determining that four were unmistakably mentally defective, yet the mother assured him that none were so marked in the Census returns. The admissions for 1912 show a percentage of over 60 with undeniable histories of a predisposition to mental disease. The discharges numbered 80, the percentage of total recoveries on the direct admissions being 38·02. The deaths numbered 70, giving a rate of 7·58 on the average daily number resident.

Staffordshire County Mental Hospital at Stafford (Annual Report for the Year 1912).—The total number of cases under treatment during the year was 1114, the average daily number on the register being 874. The admissions numbered 249, showing an increase of 30 as compared with the preceding year. 132 cases were discharged, of whom 73 had recovered, giving a percentage of recoveries on the direct admissions of 30·93. Nineteen men and 29 women were discharged relieved to the care of friends, and 11 transferred to other asylums. The deaths numbered 113, giving a percentage of 10·14 of the total number in treatment. The chief causes of death were pulmonary tuberculosis (31), cardiovascular degeneration (22), cerebral degeneration (12), heart disease (12), and general paralysis (7).

Staffordshire County Mental Hospital at Burntwood, near Lichfield (Annual Report for the Year 1912).—The average daily number on the registers at this asylum was 914, the total number of cases under treatment having been 1190. There were admitted 265 cases. Ninety-four cases were discharged, and of these 62 were recovered, the percentage of recoveries on the direct admissions being 24·5. The deaths numbered 127, the percentage of deaths on the average daily number being 13·89. Dr. J. B. Spence, the medical superintendent, remarks that the children's wards are overcrowded on both sides. It would appear that Dr. Spence has frequently drawn attention to the necessity for providing proper accommodation for this class of case, but has hitherto been disappointed in the result of his recommendations.

Surrey County Lunatic Asylum at Brookwood (Annual Report for the Year 1912).—The total number of cases under care at this asylum during the year was 1476, the average number resident being 1264. The admissions numbered 232, and of these 206 were direct. A considerable proportion of the cases showed some degree of congenital deficiency underlying their attack of insanity. A history of insane heredity was ascertained in only 20 per cent. of the cases. 145 cases were discharged, and of these 60 were recovered, giving a recovery rate calculated on the admissions, but excluding transfers, of 30·15 per cent. The deaths numbered 63, giving a rate of 4·98 per cent. on the daily average number resident. This is the lowest rate that has ever been recorded in Brookwood Asylum. Post-mortem examinations were held in 82 per cent. of the cases.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Manchester.—Dr. J. Niven's last annual report, like its many predecessors, contains a large amount of valuable information on the prevalence and prevention of disease. The City of Manchester has a population estimated at 724,168, representing 35 persons per acre, and 152,317 families or separate occupiers at the last Census. The annual birth-rate per 1000 of the population in 1912 was 25·09, a figure which, though high relatively to the country as a whole, represents a still further decline in the Manchester rate, and one which has been general throughout the different divisions of the city. There is still, however, a high rate of "natural increase" of births over deaths, the excess amounting to 6455 during the year. The recorded death-rate was 16·18 per 1000, and the corrected rate 17·47, a figure which nearly reaches the low water mark attained in 1910. The greatest improvements in mortality have occurred under the heads of tuberculosis of the lungs and other forms of tuberculosis, diseases of the digestive organs, diarrhœa, and nervous diseases. The mortality from phthisis, 1·53 per 1000, continues the gradual fall which has taken place in the deaths from this disease for the last 20 years at least; that from tuberculous diseases other than phthisis, the mean for which in 1891–1900 was 0·9, and in 1901–11 was 0·61, was reduced in 1912 to 0·54. The infantile death-rate, 122 per 1000 births, was also a low one for Manchester. An analysis of the causes of infantile mortality brings out the high relative incidence of fatal diarrhœa in the first three months of life, and the high proportion also of the deaths which are classed as due to "premature birth" and "atrophy." Diphtheria, Dr. Niven points out, has not shown any improvement in its death-rate in Manchester for the last 40 years, notwithstanding the great amount of scientific work devoted to this disease. In 1912 the number of notified cases was 474, and the case fatality at all ages no less than 20 per cent.; 313 of these cases were admitted to Monsall Hospital, of which 61 were fatal, 25 of the deaths occurring within 48 hours of admission. Tracheotomy was performed on 54 patients, of whom 28 died. Dr. J. Fletcher's report on this hospital contains an interesting statement as to the examination of the throat and nose of scarlet fever patients, which seems to illustrate the extent to which the diphtheria bacillus may be found among the general population of Manchester. A practice has now been made of swabbing the nose and throat of every scarlet fever case on admission and on transference to a convalescent ward. As a result of this investigation about 12 per cent. of the patients were found, on or after admission, to be harbouring the diphtheria bacillus, the nose in 94 per cent. of the cases acting as the nidus. Dr. Niven notes with satisfaction a distinct improvement in the death-rate from whooping-cough, which he attributes mainly to greater care bestowed by mothers on their infants, and partly to the municipal housing administration, which has improved the lighting of houses and the movement of air about them. The cancer death-rate shows an almost steady increase since 1881, and has doubled since that date. He considers that part of this increase is due to improvements in diagnosis, and part to alteration in the age-constitution of the population, but enough remains to make the increase a serious and menacing fact. Attention is drawn in the report to the high attack-rate of enteric fever in Manchester, although the death-rate from this disease has again touched the lowest point so far

recorded. A section of the report, by Dr. Barbara M. Cunningham, gives special consideration to the association of enteric fever with the consumption of mussels, which it is thought, as a result of inquiries, may have conveyed infection in 108 out of the 242 notified cases. The mussels were steamed, or nominally cooked, in at least 52 of these instances. The hospital committee decided to allow a woman, a well-known enteric fever carrier, a sum of money sufficient, along with her old age pension, to keep her from the necessity of taking lodgers to make a living. Puerperal fever notifications in Manchester are proportionately three times as many as in England and Wales generally, but the chief reason is probably the greater activity of the local administration in regard to this disease. The death-rate appears at present to be stationary. Of 124 cases notified in 1912, 88 were admitted to Monsall Hospital, and of these 15 were fatal. The records as to ophthalmia neonatorum were satisfactory; 655 cases came to notice by notification or otherwise, about a third being treated by private medical men and two-thirds at the Royal Eye Hospital. The cornea was involved in 76 instances, of which 64 completely recovered. The two nurses appointed in 1911 for this purpose are stated to have overtaken their work in 1912 in a most efficient manner. Poliomyelitis was notified in 55 cases in 1912, and the results of an instructive examination of these cases by Mr. W. St. C. McClure are included in the report. It is noteworthy that practically no evidence of infectivity could be traced. Two cases occurred in each of three houses; in two houses the cases occurred simultaneously, in the third case after an interval of six days. In the total of 52 houses affected there were 217 persons exposed to infection, 50 of whom were under 5 years of age and 99 under the age of 10 years, and amongst these only one case occurred in which personal infection could be suspected. The cases as a whole were not of a severe type. The development of the large municipal organisations to deal with tuberculosis is naturally a principal feature of the report. Before the schemes which are at present being undertaken were originated Manchester already had substantial hospital provision for tuberculosis: under the corporation and guardians, 559 beds; under the board of the consumption hospital, about 50 beds; between 60 and 70 for surgical operative treatment in charitable institutions; an unknown number for other forms of tuberculosis in charitable institutions and Poor-law hospitals, and a large number of beds in convalescent homes. At the commencement of "sanatorium benefit" this number was increased by 150 beds at the Baguley Sanatorium, and it is evident that when the work of the present year comes to be reviewed a large extension of dispensary and sanatorium work generally will have to be chronicled. The report continues the valuable record of inquiries as to possibilities of personal infection in tuberculosis cases which has been made in previous years. Passing reference may be made to the adoption of the Notification of Births Act in Manchester, after many years of controversy, in 1912; to the large amount of useful work which is here undertaken by health visitors; and to the statistical summaries of the administrative work of the public health department. An outbreak of food poisoning, attributed to infection of meat by the Gärtner bacillus, occurred in October in Openshaw, 163 persons being attacked, three with fatal results. The meat was obtained from different sources, and inquiries showed that an infection, probably present in certain portions of pig's meat, was extended to other meat foods as a result of the conditions in which meat was prepared at the shop in question.

Borough of Halifax.—In this borough the greater number of houses are not provided with water-closets, night soil being dealt with on what is known as the "Goux" system. The Goux tubs are renewed at periods varying from three to ten days according to circumstances, being washed on each occasion after they are emptied and partially filled with absorbent material before being returned to the closets. The system involves the use of 21 horses and vans and 31 men; it is not now being extended to any houses where a sewer and water-supply are available. Although this method is not one which can be looked at with favour at the present day, and is probably far from economic, it does not seem to have conduced to the same maintenance of enteric fever and infantile diarrhœa that is frequently met with in other towns served by conservancy systems. In 1912 the notified cases of enteric fever, in a population of about 102,000, were only 35, and the infant mortality rate was as low as 81 per 1000 births. Halifax is supplied with water from gathering grounds of a moorland character, the water of which is liable to contain an excessive amount of peaty acids, and hence to possess a solvent action upon lead. These supplies are treated to remove acidity with satisfactory results, though Dr. J. T. Neech suggests that the addition of lime, the neutralising agent employed, should be regulated more closely. Examples of the danger of lead pipes were furnished in 1912 in several instances where the supply, obtained from local wells, was brought to the houses by lead pipes. One fatal case of lead poisoning occurred, and in 20 houses a number of other cases came under notice. The report gives considerable attention to the examination of food and drugs during the year, and draws special attention to the liability of olive oil to be adulterated, and to the objections to bleaching and other means of treating flour and bread. In regard to flour "improvers," Dr. Neech observes that "at the best it is no satisfaction to the ordinary buyer of bread to learn that preparations are sold to enable bakers to get 10 or 15 more loaves per sack of flour than before, the obvious result being that the resulting loaves have each less nutriment in them."

Borough of Derby.—Dr. A. E. Brindley estimates that about 75 per cent. of the births in Derby are attended by midwives, which would represent about 2200 births last year. The fact that the midwife sent for medical aid in as many as 204 of these cases seems to be evidence that the requirements of the Central Midwives Board are strictly carried out in this town. The report gives special attention to the deplorably insanitary conditions met with in certain houses which have been turned into "furnished lodgings," usually by non-resident proprietors. There is no water-supply usually within the house on any floor, the bedding is of a filthy character, the staircases are invariably dark, there is no provision for food storage, no cooking conveniences or appliances are provided, nor is lighting or fuel supplied by the keeper of the house. Dr. Brindley's claim for special powers being obtained by legislation to deal with this class of house will be supported by many of those who have experience of the conditions often found in "furnished rooms." They are far worse in most respects than common lodging-houses, and Dr. Brindley suggests that they are multiplied whenever steps are taken to close houses of low rental. In such cases, he argues, the evil of allowing old insanitary houses without through ventilation to stand may be the lesser of the two. He considers that the houses in question should be differentiated from the much larger class of working-class houses in which lodgers are received and maintained under reasonably good conditions which are capable of being regulated under by-laws. For the "furnished rooms" the remedy which he suggests is annual licensing in the same way as with common lodging-houses. The establishment of a tuberculosis dispensary in connexion with the health office in February, 1912, was one of the chief sanitary events of the year, the dispensary representing the centre of the whole scheme for dealing with this disease. Negotiations for the acquisition of more suitable premises appear to have caused some difficulty, and pending their completion the staff of the public health department has had to carry on its ordinary work under conditions of considerable difficulty owing to the use of their offices both for school clinics and tuberculosis dispensary work.

REPORTS OF SCHOOL MEDICAL OFFICERS.

County of Essex.—The fourth annual report by Dr. H. W. Sinclair begins with a preface giving a useful view of the relationship of Essex with other counties, and of its population, area, and method of administration. An epidemic of measles is described which progressed steadily across eight miles of a country district despite school closure. The disease spread from house to house and from hamlet to hamlet, and six months were occupied in traversing the eight miles of country. From May to December, 1912, 1034 elementary school children received dental treatment at 16 centres, and in the Woodford district, where a dental clinic has been established three years, a 10 per cent. improvement in the condition of teeth was found on inspection. There are included in the report three special reports, on (1) Treatment of Defective Vision, by Mr. E. M. Wyche (including

an illustration of a portable lamp for eye work invented by Mr. Wyche); (2) Deformities and Malformations, by Dr. E. B. Smith, who estimates that there are 980 children (or 1·4 per cent.) so afflicted among the 70,000 on the registers; and (3) on "Nervous" Children, by Mr. H. Emlyn Jones, giving the results of an experiment on mental fatigue and pleading for special educational facilities for the "nervous" group such as are provided for the physically and mentally defective. Of this latter class 50 per cent. of the cases in the county are now educationally provided for.

County of Berkshire.—Dr. Gerard C. Taylor's report notes the marked difference in the number of cases diagnosed as tuberculosis of the lung from year to year. The figures are: 1908, 0·127 per cent.; 1909, 0·154 per cent.; 1910, 0·327 per cent.; 1911, 1·07 per cent.; and 1912, 0·55 per cent. The education committee have as yet made no provision for treatment, but have appointed two school nurses, and two voluntary dental clinics are in operation.

Hertfordshire County Council.—Mr. F. E. Fremantle deals largely with the question of the treatment of defects, which he holds can be best dealt with in a rural area by a comprehensive nursing system. The Herts county council pays a subvention of £300 a year to the county nursing association, and receives in return many valuable services which are fully available for about one-half of the area. To supply the deficiency the report suggests an extension of the nursing service, which it describes as "the only reasonable alternative to a specific system of treatment." The plan here indicated has one great merit, for "it is only the district nurse who invades the individual home, whether as district nurse or midwife, tuberculosis nurse, school nurse, or health visitor." But when the report calls for the provision of treatment necessary through the Poor-law guardians and the "development in connexion with the infirmaries of out-patient departments comparable to those of the voluntary hospitals," and follows up the suggestion by the statement that there "should be one State Medical Service ..... with one municipal hospital ..... in every town," it appears that Mr. Fremantle is allowing a passion for a "unified system" to cause him to overlook the practical difficulties. If the education authority took over all the functions of the guardians relating to children and became in theory what it is fast becoming in fact, a child authority, a unified system of a kind would be called into existence and would fit the everyday facts and difficulties instead of being imposed upon them. The report shows that of 742 defective children in the city of St. Albans 336 were treated, and of 522 defective in the St. Albans rural district only 202 were treated; in Watford (urban district), among 920 cases notified as defective, only 335 are known to have complied with the suggestion for treatment. These results are quoted as examples of "what may be done with the help of our system," but are not very likely to encourage other educational authorities. The report however, proposes the equipment of an old London horse 'bus as a travelling dental caravan at a cost, including equipment, of under £100, and utilising the services of a full-time dentist at £300 a year, who could spend a week or less in each village to overtake arrears, and suggests the provision of this travelling clinic as a suitable object for philanthropy.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns, with populations exceeding 50,000 persons at the last Census and whose aggregate population at the middle of this year is estimated at 17,852,766 persons, 8646 births and 4671 deaths were registered during the week ended Saturday, Oct. 18th. The annual rate of mortality in these towns, which had been 14·4, 13·6, and 14·3 per 1000 in the three preceding weeks, declined to 13·6 per 1000 in the week under notice. During the thirteen weeks of last quarter the mean annual death-rate in these towns averaged 12·7, against a corresponding rate of 11·8 per 1000 in the Metropolis. Among the several towns the death-rate last week ranged from 5·4 in Wimbledon, 5·6 in Bournemouth, 5·9 in Southend-on-Sea, 6·7 in Gillingham, and 7·0 in Enfield and in Wakefield, to 19·5 in Walsall, 19·7 in Barnsley, 19·8 in Sunderland, 24·1 in Tynemouth, and 24·3 in Oldham.

The 4671 deaths from all causes were 217 fewer than the number in the previous week, and included 743 which were referred to the principal epidemic diseases, against 866 and 925 in the two preceding weeks. Of these 743 deaths, 601 resulted from infantile diarrhœal diseases, 49 from diphtheria, 32 from whooping-cough, 25 from measles, 20 from enteric fever, and 16 from scarlet fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 2·2, against 2 5 and 2·7 per 1000 in the two preceding weeks. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 927, 730, and 769 in the three preceding weeks, declined to 601 last week; of this number 157 were recorded in London, 34 in Birmingham, 30 in Liverpool, 20 in Manchester, 18 in Hull, 17 in Sheffield, 16 in Sunderland, and 15 in West Ham. The deaths referred to diphtheria, which had been 38, 43, and 44 in the three preceding weeks, further rose to 49 last week, and included 12 in London, 3 in Portsmouth, 3 in Birmingham, and 2 each in Northampton, Plymouth, Bolton, Barrow-in-Furness, Cardiff, and Rhondda. The fatal cases of whooping-cough, which had been 49, 32, and 39 in the three preceding weeks, fell to 32 last week; 8 deaths were registered in London, 3 in Birmingham, 3 in Liverpool, and 2 in Manchester. The deaths attributed to measles, which had been 31, 28, and 26 in the three preceding weeks, were 25 last week, and included 5 in London, 3 in Oldham, and 2 each in Stockport, Liverpool, Blackpool, Bradford, and Dewsbury. The deaths referred to enteric fever, which had steadily increased from 10 to 24 in the five preceding weeks, declined to 20 last week; 5 deaths occurred in London and 2 each in Stoke-on-Trent, Dudley, Leeds, and Hull. The fatal cases of scarlet fever, which had been 19, 14, and 23 in the three preceding weeks, fell to 16 last week, of which number 3 were recorded in London, 3 in Manchester, and 3 in Sunderland.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily risen from 2112 to 3021 in the six preceding weeks, had further increased to 3247 on Saturday last; 575 new cases were admitted during the week, against 508, 498, and 484 in the three preceding weeks. These hospitals also contained on Saturday last 1112 cases of diphtheria, 180 of whooping-cough, 68 of enteric fever, and 65 of measles, but not one of small-pox. The 1224 deaths from all causes in London were 5 fewer than the number in the previous week, and were equal to an annual death-rate of 14·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 134, 123, and 176 in the three preceding weeks, fell to 151 last week, and were no fewer than 175 below the number recorded in the corresponding week of last year.

Of the 4671 deaths from all causes in the 96 towns, 159 were attributed to different forms of violence and 334 were the subject of coroners' inquests. The causes of 25, or 0·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, Nottingham, and in 70 other smaller towns. Of the 25 uncertified causes of death last week, 4 were registered in Birmingham, 3 in London, 2 in Liverpool, and 2 in St. Helens.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1106 births and 600 deaths were registered during the week ended Saturday, Oct. 18th. The annual rate of mortality in these towns, which had been 15·1, 14·5, and 14·7 per 1000 in the three preceding weeks, declined to 13·9 per 1000 in the week under notice. During the thirteen weeks of last quarter the mean annual death-rate in these towns averaged 14·3, against 12·7 per 1000 in the 96 large English towns. Among the several Scotch towns the death-rate last week ranged from 7·3 in Clydebank, 7·6 in Ayr, and 8·9 in Motherwell, to 16·5 in Kilmarnock, 17·4 in Greenock, and 18·3 in Paisley.

The 600 deaths from all causes were 38 fewer than the number in the previous week, and included 69 which were referred to the principal epidemic diseases, against numbers declining from 126 to 81 in the five preceding weeks.

Of these 69 deaths, 29 resulted from infantile diarrhœal diseases, 14 from measles, 13 from scarlet fever, 8 from diphtheria, 3 from enteric fever, and 2 from whooping-cough, but not one from small-pox. These 69 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·6, against 2·2 per 1000 in the 96 large English towns. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had steadily declined from 96 to 43 in the five preceding weeks, further fell to 29 last week; of this number, 11 were recorded in Glasgow, 7 in Dundee, 3 in Aberdeen, 2 in Edinburgh, and 2 in Motherwell. The deaths referred to measles, which had been 10, 8, and 14 in the three preceding weeks, were again 14 last week, and included 9 in Glasgow and 2 in Edinburgh. The fatal cases of scarlet fever, which had been 5, 7, and 6 in the three preceding weeks, rose to 13 last week; 4 deaths were registered in Aberdeen and 3 in Glasgow. The deaths attributed to diphtheria, which had been 10, 14, and 13 in the three preceding weeks, declined to 8 last week, and included 3 in Glasgow and 2 in Aberdeen. The 3 deaths referred to enteric fever were equal to the average in the four preceding weeks, and were recorded in Glasgow, Dundee, and Clydebank respectively. The 2 fatal cases of whooping-cough occurred in Glasgow.

The deaths referred to diseases of the respiratory system, which had increased from 63 to 84 in the four preceding weeks, fell to 80 last week; 26 deaths were attributed to different forms of violence, against 27 and 23 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,199,180 persons at the middle of this year, 599 births and 367 deaths were registered during the week ended Saturday, Oct. 18th. The annual rate of mortality in these towns, which had been 21·0, 18·0, and 17·1 in the three preceding weeks, further fell to 16·0 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 18·2 per 1000; in the 96 large English towns the corresponding rate did not exceed 12·7, while in the 16 Scotch towns it was equal to 14·3 per 1000. The annual death-rate last week was equal to 17·7 in Dublin (against 14·1 in London and 13·9 in Glasgow), 14·6 in Belfast, 13·6 in Cork, 14·0 in Londonderry, 8·1 in Limerick, and 3·8 in Waterford, while in the 21 remaining smaller towns the mean annual death-rate was 19·3 per 1000.

The 367 deaths from all causes were 27 fewer than the number in the previous week, and included 61 which were referred to the principal epidemic diseases, against numbers steadily declining from 132 to 68 in the five preceding weeks. Of these 61 deaths, 48 resulted from infantile diarrhœal diseases, 4 from scarlet fever, 3 from measles, 3 from whooping-cough, and 3 from diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases last week was equal to 2·7 per 1000; in the 96 large English towns the corresponding rate was 2·2, while in the 16 Scotch towns it did not exceed 1·6 per 1000. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had steadily declined from 111 to 55 in the five preceding weeks, further fell to 48 last week; of this number 23 occurred in Dublin, 9 in Belfast, and 4 in Cork. The 4 deaths referred to scarlet fever, comprising 3 in Belfast and 1 in Limerick, were equal to the average in the five preceding weeks. Of the 3 fatal cases of measles, 2 were recorded in Galway and 1 in Dublin. The 3 deaths from whooping-cough were slightly below the average in recent weeks, and comprised 2 in Galway and 1 in Dublin. The 3 deaths referred to diphtheria were equal to the average in the four preceding weeks, and included 2 in Dublin and 1 in Belfast.

The deaths referred to diseases of the respiratory system, which had been 60, 34, and 54 in the three preceding weeks, fell to 48 in the week under notice. Of the 367 deaths from all causes, 89, or 24 per cent., occurred in public institutions, and 5 resulted from various forms of violence. The causes of 18, or 4·9 per cent. of the total deaths, were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week did not exceed 0·5 per cent.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1913.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 7·7 per 1000 of the population, estimated at 4,518,191 persons in the middle of the year; in the three preceding months the rates were 5·4, 6·6, and 5·4 per 1000 respectively. The lowest rates last month were recorded in Kensington, Hammersmith, the City of Westminster, Hampstead, Stoke Newington, Wandsworth, and Lewisham; and the highest rates in Shoreditch, Bethnal Green, Poplar, Southwark, Bermondsey, and Deptford. The prevalence of scarlet fever showed a considerable increase over that recorded in other recent months; this disease was proportionally most prevalent in Chelsea, Holborn, the City of London, Poplar, Southwark, Bermondsey, Camberwell, and Deptford. The Metropolitan Asylums Hospitals contained 2552 scarlet fever patients at the end of last month, against 2093 at the end of each of the two preceding months; the weekly admissions averaged 402, against 312 and 258 in the two preceding months. Diphtheria was more prevalent during September than in any previous month of this year; the greatest proportional prevalence of this disease last month was recorded in St. Pancras, Shoreditch, Bethnal Green, Battersea, and Deptford. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 886 and 798 at the end of the two preceding months, had risen again to 909 at the end of last month; the weekly admissions averaged 147, against 128 and 99 in the two preceding months. Enteric fever also was more prevalent than in any preceding month of the year; the greatest proportional prevalence of this disease was recorded in Kensington, Finsbury, Stepney, Southwark, and Lewisham. There were 56 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 50 and 37 at the end of the two preceding months; the weekly admissions averaged 11, against 10 and 6 in the two preceding months. Erysipelas was proportionally most prevalent in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Deptford. The 27 cases of puerperal fever notified during the month included 3 in Kensington, 3 in Stepney, 3 in Southwark, and 2 each in Paddington, Hammersmith, Bethnal Green, Lambeth, and Greenwich. The 6 cases of cerebro-spinal meningitis belonged respectively to Fulham, Stoke Newington, Stepney, Lambeth, Battersea, and Wandsworth; and the 27 cases of poliomyelitis included 8 in Stepney, 5 in Islington, and 2 each in Kensington, Stoke Newington, Shoreditch, and Lewisham.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the several boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex- and age-constitution of the populations of the several boroughs. During the four weeks ending Sept. 27th, 4610 deaths of London residents were registered, equal to an annual rate of 13·3 per 1000; in the three preceding months the rates had been 11·1, 10·6, and 11·8 per 1000 respectively. The death-rates last month ranged from 7·9 in Hampstead, 8·5 in Lewisham, 10·3 in Stoke Newington and in Wandsworth, 11·1 in Chelsea and in the City of London, and 11·2 in Woolwich, to 16·3 in Finsbury, 16·7 in Stepney, 16·8 in Bethnal Green, 18·3 in Southwark, 19·6 in Bermondsey, and 22·5 in Shoreditch. The 4610 deaths from all causes included 927 which were referred to the principal infectious diseases; of these, 15 resulted from measles, 9 from scarlet fever, 25 from diphtheria, 30 from whooping-cough, 10 from enteric fever, and 838 from diarrhœa and enteritis among children under two years of age. No death from any of these diseases was recorded last month in the City of London; among the metropolitan boroughs they caused the lowest death-rates in the City of Westminster, Hampstead, St. Marylebone, St. Pancras, Stoke Newington, and Lewisham; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The 15 fatal cases of measles were 34 fewer than the corrected average

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1913.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1913.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.†
LONDON	**4,518,191**	**1**	**1642**	**612**	**—**	**75**	**3**	**27**	**230**	**6**	**27**	**2673**	**7·7**	**—**	**15**	**9**	**25**	**30**	**10**	**838**	**927**	**2·7**	**4610**	**13·3**
West Districts.																								
Paddington	142,210	—	47	23	—	3	—	2	8	—	—	83	7·6	—	1	—	—	—	2	18	21	1·9	125	11·4
Kensington	171,284	—	39	19	—	4	—	3	9	—	2	76	5·8	—	1	—	—	1	1	22	25	1·9	155	11·7
Hammersmith	123,745	—	43	3	—	2	—	2	3	—	1	54	5·7	—	—	2	—	1	—	11	14	1·5	114	11·9
Fulham	157,117	—	70	25	—	3	—	1	6	1	—	106	8·8	—	—	1	—	1	1	20	23	1·9	147	12·6
Chelsea	64,598	—	33	4	—	1	—	1	—	—	1	40	8·1	—	1	—	—	—	—	7	8	1·6	58	11·1
City of Westminster	154,810	—	25	20	—	1	—	1	4	—	—	51	4·3	—	—	—	1	—	—	8	9	0·8	132	11·7
North Districts.																								
St. Marylebone	114,532	1	41	11	—	1	—	—	8	—	—	62	7·1	—	—	2	1	1	—	7	11	1·3	113	13·2
Hampstead	86,346	—	17	4	—	2	—	—	2	—	—	25	3·8	—	—	—	—	—	—	1	1	0·2	50	7·9
St. Pancras	214,330	—	59	43	—	4	—	—	12	—	—	118	7·2	—	—	—	—	—	—	22	22	1·3	226	13·7
Islington	325,585	—	144	59	—	5	—	—	18	—	5	231	9·2	—	—	—	3	5	1	64	73	2·9	352	13·7
Stoke Newington	50,518	—	6	5	—	1	—	—	3	1	2	18	4·6	—	—	—	—	1	—	4	5	1·3	42	10·3
Hackney	223,353	—	80	37	—	2	—	1	16	—	1	137	8·0	—	—	1	1	2	—	36	40	2·3	200	11·8
Central Districts.																								
Holborn	46,949	—	25	3	—	—	—	—	2	—	—	30	8·3	—	—	—	—	1	—	5	6	1·7	50	13·9
Finsbury	84,679	—	36	10	—	2	—	—	13	—	—	61	9·4	—	—	—	1	3	—	21	25	3·8	107	16·3
City of London	17,916	—	9	2	—	1	—	—	—	—	—	12	9·2	—	—	—	—	—	—	—	—	—	14	11·1
East Districts.																								
Shoreditch	109,654	—	49	24	—	—	1	—	13	—	2	89	10·6	—	—	1	—	1	—	64	66	7·8	183	22·5
Bethnal Green	127,824	—	46	30	—	2	—	2	19	—	—	99	10·1	—	1	—	1	1	—	49	52	5·3	159	16·8
Stepney	275,300	—	85	38	—	11	—	3	30	1	8	176	8·3	—	—	—	1	3	2	78	84	4·0	337	16·7
Poplar	160,913	—	80	28	—	2	—	—	13	—	—	123	10·0	—	1	—	4	2	1	46	54	4·4	190	15·2
South Districts.																								
Southwark	188,487	—	88	30	—	6	—	3	11	—	—	138	9·5	—	—	—	2	1	—	47	50	3·5	263	18·3
Bermondsey	124,739	—	73	18	—	1	1	1	7	—	1	102	10·7	—	3	1	3	—	—	42	49	5·1	188	19·6
Lambeth	297,139	—	102	22	—	2	—	2	16	1	—	145	6·4	—	2	—	1	1	1	53	58	2·5	281	12·1
Battersea	167,464	—	69	35	—	2	—	1	6	1	—	114	8·9	—	—	—	—	—	—	48	48	3·7	178	14·0
Wandsworth	330,395	—	51	18	—	7	—	—	13	1	1	91	3·6	—	1	—	1	1	—	46	49	1·9	260	10·3
Camberwell	261,805	—	121	17	—	2	1	1	15	—	1	158	7·9	—	4	1	—	2	—	47	54	2·7	266	13·0
Deptford	109,280	—	71	22	—	—	—	—	18	—	—	111	13·2	—	—	—	1	—	—	25	26	3·1	111	13·0
Greenwich	96,015	—	40	17	—	2	—	2	7	—	—	68	9·2	—	—	—	1	—	1	14	16	2·2	96	12·8
Lewisham	168,822	—	41	22	—	5	—	1	4	—	2	75	5·8	—	—	—	2	1	—	14	17	1·3	111	8·5
Woolwich	122,382	—	52	23	—	1	—	—	4	—	—	80	8·5	—	—	—	1	1	—	19	21	2·2	102	11·2
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

number in the corresponding period of the five preceding years, and included 4 in Camberwell, 3 in Bermondsey, and 2 in Lambeth. The 9 deaths from scarlet fever were 10 below the corrected average, and included 2 in Hammersmith, and 2 in St. Marylebone. The 25 fatal cases of diphtheria showed a decline of 16 from the corrected average number, and included 4 in Poplar, 3 in Islington, 3 in Bermondsey, 2 in Southwark, and 2 in Lewisham. The 30 deaths from whooping-cough were 21 below the corrected average, and included 5 in Islington, 3 in Finsbury, 3 in Stepney, 2 in Hackney, 2 in Poplar, and 2 in Camberwell. The 10 deaths from enteric fever were equal to one-half the corrected average number, and included 2 in Paddington and 2 in Stepney. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Bermondsey, and Battersea. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases, excluding diarrhœa, was 50·6 per cent. below the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointment has been notified:—Staff-Surgeon: A. Woollcombe to the *Fearless*, temporary, to date Oct. 18th.

ROYAL ARMY MEDICAL CORPS.

Major Norman Faichnie to be Lieutenant-Colonel, vice O. R. A. Julian, C.M.G., supernumerary (dated Oct. 13th, 1913).

Captain Charles V. B. Stanley retires, receiving a gratuity (dated Oct. 22nd, 1913).

Colonel R. J. Geddes, D.S.O., has taken up duty as Assistant Director of Medical Services at Military Headquarters, Devonport District. Colonel F. J. Jencken, Assistant Director of Medical Services to the Colchester District, has been granted leave of absence.

Lieutenant-Colonel M. O'D. Braddell on transfer to the Home Establishment, tour expired from India, has been appointed to the Irish Command from Oct. 26th for duty in the Cork District. Lieutenant-Colonel A. T. I. Lilly has been transferred from the Military Hospital at Belgaum Cantonment and appointed to hold charge of the Military Hospital at Colaba, Bombay. Lieutenant-Colonel J. Will, Deputy Assistant Director of Medical Services to the Northumbrian Division at Richmond, has been selected for increased rate of pay under Article 358 of the Royal Warrant for Pay and Promotion. Brevet-Colonel C. H. Melville has been appointed to hold charge of the Military Hospital at Tidworth, Salisbury Plain District. Lieutenant-Colonel J. W. Bullen has been transferred from India to the Home Establishment on the expiration of leave of absence. Lieutenant-Colonel J. Givin has been appointed Senior Medical Officer on board the transport s.s. *Rewa*, which left Bombay for Southamptom with time-expired troops on Oct. 10th.

Major St. John B. Killery has been granted six months' general leave of absence home from India. Major W. A. Ward has been transferred from the London District to the Military Hospital at Bulford Camp, Salisbury Plain. Major W. P. Gwynn has been transferred from India to the Home Establishment at the termination of his tour of duty. Major N. J. C. Rutherford has been selected for appointment as Specialist Sanitary Officer to the Cork District in succession to Major J. Dorgan, who has embarked for a tour of service at Hong-Kong. Major B. Watts has been appointed for duty in medical charge of troops on board the transport s.s. *Rewa*. An exchange has been approved by the Director-General between Major J. W. Houghton and Major J. S. Bostock, serving at Aldershot and Agra Cantonment respectively. Major E. Bennett has taken up duty at Poona Cantonment. Major J. A. Hennessy has been selected to hold charge of the Military Hospital at Ahmednagar Cantonment. Major H. A. Davidson has embarked for a tour of service in the Straits Settlements, and on arrival will be appointed to the Military Hospital at Sirgapore. Major J. V. Forrest has been appointed to the London District for duty in the Medical Division at the War Office. Major J. C. Kennedy has been appointed Specialist in Bacteriology at the Royal Army Medical College, Millbank.

Captain L. A. A. Andrewes has been selected for appointment as Specialist in Dermatology and Venereal Diseases at the Military Hospital, York, with effect from Nov. 1st, in succession to Captain T. E. Harty, who has embarked for a tour of service in the Sierra Leone Protectorate. Captain D. T. MacCarthy has been granted an extension of Indian tour of service for one year. Captain J. Du P. Langrishe has been appointed to the Cork District for duty. The services of Captain D. P. Watson have been placed at the disposal of the Colonial Office in connexion with the prevention of sleeping sickness in the Nyasaland Protectorate. Captain J. B. Meldon has been placed under orders to embark for a tour of service with the Northern Army in India, and on arrival will be appointed to the First (Peshawar) Division for duty. Captain P. C. Field has arrived home on general leave of absence from the Military Hospital at Alexandria. Captain B. Johnson has been appointed to the Irish Command for a tour of duty. Captain G. F. Rudkin has been transferred from India to the Home Establishment at the termination of leave of absence. Captain R. P. Lewis has taken up duty at the Military Hospital, Aldershot. Captain S. S. Dykes has been transferred from the Military Hospital at Dinapore to Dum Dum. Captain W. J. Tobin has been granted six months' general leave of absence home from India. Captain M. Leckie has arrived home on general leave of absence from duty with the Egyptian Army. Captain W. I. Thompson has been appointed to the Aldershot Command for a tour of duty. Captain C. A. J. A. Balck, specialist in physical training at the Military Hospital, Curragh Camp, has qualified as a First-class Interpreter in the French Language under War Office Regulations. Captain G. Ormrod has taken up duty at the Military Hospital, Aldershot. Captain A. H. Hayes has been placed under orders to embark for a tour of service with the Northern Army in India, and on arrival will be appointed for duty in the Third (Lahore) Division. Captain H. G. Robertson has arrived home on general leave of absence from the Military Hospital at Malta. Captain G. P. A. Bracken has been appointed to the Northern Command for a tour of duty. Captain W. P. Purdon has taken up duty on the Home Establishment on transfer from India at the termination of leave of absence. Captain H. G. Sherren has taken up duty in the London District. Captain C. T. V. Benson has been transferred from the Military Hospital at Calicut to Bangalore Cantonment, Captain V. T. Carruthers has been appointed to the Military Hospital at Norwich.

Lieutenant O. W. J. Wynne has been placed under orders to embark at Southampton for a tour of duty with the Southern Army in India, and on arrival will be appointed to the Eighth (Lucknow) Division for duty. Lieutenant J. H. C. Greene has been seconded for service under the Colonial Service. Lieutenant H. S. Blackmore has been appointed to hold medical charge at St. John's Wood Barracks, London. Lieutenant J. E. M. Elliott has taken up duty at the Military Hospital, Winchester. Lieutenant D. W. Bruce has been appointed to hold charge of the Ewshott Reception Hospital at Aldershot. Lieutenant P. A. With has taken up duty at the Military Hospital, Curragh Camp. Lieutenant W. F. Christie has embarked for a tour of duty in the Straits Settlements. Lieutenant W. Stewart has arrived in India for a tour of duty. Lieutenant N. T. Whitehead and Lieutenant A. L. Urquhart have joined the Royal Army Medical College for a course of instruction in Military Hygiene and Sanitation. The following officers have been placed under orders to embark at Southampton for a tour of duty in India: Lieutenants E. T. Vivian, W. B. Laird, F. R. B. Skrimshire, E. B. Allnut, H. C. Todd, E. C. Deane, I. R. Hudlestone, W. Macnaughton, D. T. M. Large, W. W. Pratt, M. Burnett, C. J. Blaikie, and S. J. Barry.

INDIAN MEDICAL SERVICE.

The King has approved of the promotion of the following officers of the Indian Medical Service:—

Lieutenant-Colonel to be Colonel (dated June 30th, 1913): Robert Robertson.

Majors to be Lieutenant-Colonels (dated July 29th, 1913): Cecil Charles Stuart Barry, Jay Gould, John Mulvany, Henry Burden, C.I.E., Charles Harford Bowle-Evans, Hugh Bennett, Alfred Eugene Berry.

Captains to be Majors (dated July 29th, 1913): Alfred Ernest John Lister, Thomas Samuel Beauchamp Williams, John Edmund Clements, Ernest Bisset, Alexander William Overbeck-Wright, David Munro, Robert Markham Carter, Dodington George Richard Shurton Baker, Jasper Robert Joly Tyrrell, Thomas Henry Gloster, James Henry Horton, D.S.O., William Adolphus Justice.

Lieutenants to be Captains (dated July 30th, 1913): Phirozshah Byramji Bharucha, Richard William George Hingston, John Bailey Tackaberry, Charles Newton-Davis, Reginald Charles Clifford, Clive Newcomb, Henry Edward Shortt, Latafat Husain Khan, Robert de Stretton Berkeley Herrick, Hargobind Lal Batra, Murray Purvis, Duncan McNab Taylor.

The King has also approved the retirement of Colonel Charles Fancourt Willis, C.B. (dated Oct. 1st, 1913).

Lieutenant-Colonel R. H. Castor has been granted six months' extension of leave of absence home from India on medical certificate. Lieutenant-Colonel W. E. Jennings has taken up duty under the Government of India. The services of Lieutenant-Colonel D. M. Davidson have been replaced at the disposal of the Government of the Punjab. Lieutenant-Colonel G. B. Irvine has been granted combined leave of absence home from India for one year.

Major H. B. Foster, on return to India from leave of absence home, has been appointed to officiate as Police Surgeon at Calcutta during the absence on combined leave of Major O. St. John Moses. Major A. E. J. Lister has been selected for appointment as Professor of Physiology on the staff of the King George V. Medical College at Lucknow. Major W. Lapsley has been transferred from Bahraich to Gonda and appointed Civil Surgeon. Major G. Y. C. Hunter has been granted an extension of leave of absence for six months home from India on medical certificate. Major J. H. Leicester has been transferred from Behar and Orissa and appointed to officiate as Professor of Midwifery at the Government Medical College, Calcutta, during the absence on leave of Lieutenant-Colonel C. R. Green. Major W. A. Justice has been granted three months' privilege leave of absence.

Captain F. E. Wilson has arrived home on leave of absence from India. The services of Captain S. J. Bhathena have been replaced at the disposal of H.E. the Commander-in-Chief in India by the Home Department. Captain J. M. Skinner has been appointed to officiate as Fourth Physician at the Government Medical College, Madras. The services of Captain A. W. Howlett have been replaced at the disposal of H.E. the Commander-in-Chief for transfer to the Royal Army Medical Corps. Captain J. L. Lunham has been granted an extension of leave of absence home from India. Captain V. B. Nesfield, chemical examiner and Government analyst to the United Provinces, has been appointed to officiate as Civil Surgeon at Banda. The services of Captain R. S. Kennedy have been replaced at the disposal of H.E. the Commander-in-Chief in India. Captain J. A. A. Kernahan has been selected for appointment as Specialist in the Prevention of Disease and placed in charge of the Bacteriological Research Laboratory at Shillong. Captain R. D. Willcocks has been granted an extension of leave of absence home from India for a further six months. Captain J. F. Boyd has taken up duty in connexion with plague prevention in the United Provinces of Agra and Oudh. The services of Captain H. R. Dutton have been placed at the disposal of the Government of Bengal Presidency.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant John C. Hall to be Captain (dated Sept. 30th 1913).

The undermentioned Lieutenants are confirmed in their rank:—Douglas R. King, Gavin Young, Allan D. Fraser, David Mackie, James J. Finlay, Robert G. McElney, Thomas McClurkin, Maurice P. Inglis, Thomas W. E. Elliott, and William A. Lethem.

Lieutenant Donald J. Armour, from the Royal Army Medical Corps (Territorial Force), to be Lieutenant (dated Oct. 22nd, 1913).

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd Wessex Field Ambulance, Royal Army Medical Corps: Lieutenant David Macnair to be Captain (dated June 3rd, 1913).

3rd Wessex Field Ambulance, Royal Army Medical Corps: Edgar Curnow Plummer to be Lieutenant (dated Sept. 5th, 1913).

South Wales Mounted Brigade Field Ambulance, Royal Army Medical Corps: Captain John Griffiths to be Major (dated May 13th, 1913).

For attachment to Units other than Medical Units.—To be Lieutenants: Douglas Edward Finlay (dated Sept. 1st, 1913) and Harry Winstanley Shadwell (dated March 11th, 1913).

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Captain William Henry Rowell, from the Notts and Derby Mounted Brigade Field Ambulance, Royal Army Medical Corps, to be Captain (dated Oct. 22nd, 1913).

THE MILITARY SURGEON.

In the *Military Surgeon* (Chicago) for September Fleet-Surgeon Charles N. Fiske, U.S.N., discusses the duties of the principal medical officer of a fleet in preparation for battle. In the United States service this officer is termed the fleet-surgeon; his duties are not comprehensively laid down, but "an officer's position and responsibilities are largely what he makes them." The executive officers of that navy are more and more appreciating the military importance of the work of the medical department, and are more ready to accept advice than are officials in civil life. Still, it is important to keep before them histories of campaigns whose success or failure has resulted from the handling of epidemics or the due evacuation of sick and wounded. By conference with the other medical officers the principal medical officer should arrange in his fleet common schemes for dealing with the wounded during action, treatment of their wounds, and classification of the severity of their injuries. He must also settle who are to keep records of the wounded and of the dead, who besides the surgeons shall give them opiates, who shall affix the diagnosis and identification label, &c. This uniform classification of injuries is of great importance, for when the battle is over and the hospital ship has returned to the fleet from her battle station, 50 or 100 miles away, she can only take a certain number of cases, and a uniform classification of injuries in reports to the flagship allows the admiral to distribute her benefits among the ships in proportion to the damages their men have suffered. Fleet-Surgeon Fiske emphasises the importance to all medical officers of a study of the occurrences in former battles and engagements, that nothing may take them by surprise, and so their equanimity shall improve the confidence of the men and prevent panic. Captain H. W. Jones, Medical Corps, U.S. Army, has been examining old recruiting books in a Southern State, and concludes that the recruits of 1867–8, and especially of 1875–9, were bigger and heavier than those now enlisting. Surgeon D. V. Carpenter, U.S.N., gives an interesting account of the work done by the Egyptian Red Crescent hospital ship in the recent war, when she would carry on one trip perhaps 2000 refugees and 400 wounded soldiers from Salonica to Smyrna. The common diseases were small-pox, dysentery, typhoid fever, and pneumonia.

ARCHIV FÜR SCHIFFS- UND TROPEN-HYGIENE.

In the August issue of this publication Dr. Arthur Scherschmidt says that he has been giving salvarsan injections for yaws, and has been gradually reducing the volume of the injection till he now dissolves 0·45 grm. neosalvarsan in only 10 c.c. of water, and 0·6 grm. salvarsan in 10 c.c. freshly distilled water to which 23 drops of caustic potash solution are added to produce a perfectly clear liquid. This he injects with a 10 c.c. syringe and a very fine needle, and the operation is, of course, much simplified. It needs no longer to be done in hospital, and the vein is much more easily found—all which greatly helps the surgeon working in the tropics. No ill-effects whatever have followed these injections.

NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the directors of the Naval Medical Supplemental Fund held on Oct. 14th, Surgeon-General Arthur W. May, C.B., in the chair, the sum of £45 was distributed among the several applicants.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 1150.*)

XXIV.—NOTTINGHAM: THE PANEL DOCTORS AND THE WOMEN WORKERS.

LITTLE or nothing was done at Nottingham to resist the National Insurance Act. From the first it was felt that a certain number of practitioners would gladly join the panel. The entire arrangement was so evidently to their advantage that it would not be in human nature for them to resist, and it would be incumbent upon others to follow suit. This is a good example of the reason why there was so much difference of opinion about the Act—it works in various localities in various ways; in one place it is a material benefit, in another it inflicts social and financial injury upon the practitioner. At Nottingham, on the whole, the Act is proving advantageous financially to the general practitioner, and some 95 per cent. of them have gone on the panel. It is quite certain that the medical profession there have no desire whatever to see the Act abolished. Yet I have come across some Nottingham medical men who consider that they have lost, and lost in pocket by the Act. Their complaints are similar to those recorded in other industrial towns and districts. Prosperous business men have sons and daughters who are beginning to work and who only earn small salaries, and therefore are insured persons. Formerly their parents paid full fees for them to the family medical adviser. This substantial class of private practice has disappeared. Then here also there are certain classes of insured persons who demand too much from contract practice. Perhaps something more like a resistance would have been attempted at Nottingham if the quarter of a million which it was suggested would be raised to constitute a strike fund had been forthcoming. On several occasions conversation has arisen on this subject during my inquiries, and wonder was manifested that so little money was subscribed for this purpose. The opinion generally expressed is that the blame must be generally distributed, as each individual relied on others to give and thus hardly anyone subscribed. Had the result of the appeal to the medical profession for money been foreseen a properly organised canvass, however late in the day, might have been started, and a very large amount of money could have been obtained. This, at any rate, is the opinion I have formed after discussing the matter now in many different cities and localities.

It should be observed that, if the Nottingham practitioners were not zealous in their opposition to the Act, it was not because they were lacking in the spirit of organisation. On the contrary, a Public Medical Service is established. It is working now, and deals with uninsured persons whose income does not exceed £2 a week. It was started before there was any question of the Insurance Act, as a check on the abuse arising in the Friendly Societies and Medical Aid Associations. The Nottingham Division of the British Medical Association also felt it was necessary to take measures in regard to the families of persons who were members of benefit societies, as to-day it is necessary in regard to the families of insured persons. Then there was a Town Medical Aid organised by trustees. It was self-supporting and approved by the medical profession, though some exception was taken to the arrangements for the selection of the medical staff. Now this body has amalgamated with the Public Medical Service. The special list of medical attendants is abolished, the policy of the open door is introduced, and the patients have a very large choice of medical advisers.

A Popular Panel.

The rule of the Public Medical Service is that all members who are at work or who are more than 16½ years old must pay 2*d.* a week, all children pay 1½*d.* a week, but no family pays more than 6*d.* a week for the children, however numerous they may be. There is a certain elasticity allowed. The management, or central committee, as it is called, may arrange other terms to meet necessitous or special cases. Thus it is proposed to provide medical attendance for all persons outside the Act who are not earning more than £2 a week. Here it must be noticed a strict wage limit is observed. There are 56 medical men on a list from which members of the Public Medical Service can choose their attendant. On the panel and at the service of insured persons there are 98 medical men. Apart from the consultants, specialists, and the hospital staff, there remain, I believe, only four general practitioners who are not on the Nottingham panel. These in themselves are eloquent figures. The number of insured persons is 95,000, and there are about 9000 who as yet have not selected a medical attendant. Unlike many other towns which I have visited on this tour of inspection, the Nottingham Insurance Committee has done nothing, and does not seem inclined to do anything, in regard to the unallotted insured persons. The clerk of the Nottingham Insurance Committee maintained that no Insurance Committee in the kingdom had a sufficiently accurate register of members to make an allotment.

At Nottingham matters appear to have worked smoothly from the first. After three months very few misunderstandings occurred. The panel doctors and the chemists are paid every month. The panel doctors have received the full 7*d.* per month for every insured person, though the dispensing chemists have only obtained 15*s.* in the £ on their claims. But of the money received something like 15 per cent. has not been paid out, and this is due to the payments of insured persons who have not selected a medical attendant. The impression at the Insurance Committee office is that the medical men on the panel are satisfied, while that they are satisfying their patients can be taken for granted, for during nine months only one complaint had come up for investigation by the Medical Service Subcommittee. Nor can it be said that there are any panel doctors who have acquired a privileged position by filling up their list of insured persons with selected lives. The population at Nottingham is so mixed that there is no one favoured district where a list of 1000 insured persons belonging to about the same class could be found. In every district there would be some collections of good lives and some of very bad ones.

Effect of the Act on the Hospitals.

I called on one of the consulting staff of the Nottingham General Hospital and he appeared well pleased with the effect of the Act in so far as the work done at the hospitals is concerned. It had, I understood from him, so relieved the congestion at the out-patients' medical department that the staff were able to devote more time to the cases. The hospital was, he declared, "becoming a consultation station instead of a relief station." The medical men who sent their patients to the hospital, also sent a note giving their reason for so doing. The Act had greatly increased the income of those practitioners who had formerly taken contract practice, he said, and he mentioned the case of a new neighbour of his own who used to live in a very modest way and with difficulty earned £200 a year. As a panel doctor under the Act this practitioner was now, said my informant, making an income of £800, and thus could afford a better house in a better street and was obviously a more prosperous man. The hospital was also relieved of some of its work by the coöperation of the panel practitioners. Cases of accident attending at the hospital were not told to go to the panel doctor for a second and subsequent dressings as had been done at some charitable institutions. The cases were allowed to return to the hospital as a rule, but at the same time many cases of different sorts were referred to the practitioners on the panel. Though the number of medical out-patients attending the hospital had been reduced by about two-thirds, the Act has made little or no difference so far as the surgical out-patients are concerned.

The Plea against the Panel.

My next visit was to one of the practitioners who had refused to go on the panel. His action, it soon appeared, had entailed a considerable loss upon him, as he had recently taken over a practice which comprised many clubs and from these members he might have had a long list of insured persons. But he had acted deliberately, holding that contract practice was degrading to the profession and injurious to the public. The practitioners discharging contract engagements would, in his opinion, be forced by the very nature of their work to forget the dignity of their profession. Some practitioners, he said, had confessed that they had not been able for some months to devote proper

time and care to making diagnoses. They might be making more money. If in a poor street there were 100 houses, containing, say, 150 insured persons, such a street would bring to-day to the medical profession a much larger income than had ever before been received from it for medical attendance, but that the benefits either to the medical man or the patient were proportionally increased he very much doubted. The unfortunate thing, in his view, was that the contract system was increasing and reviving the faith of the public in drugs. This was just the exact opposite of what was required. The profession at the very time of the introduction of the Bill were trying to teach a better lesson, but the Government had stopped such teaching. The doctor on the panel had little time to do more than prescribe, and little more seemed needed of him. He could give something to relieve the pain, but had not time to seek out the toxic influence that caused the disease. "A pill, a lotion, the mixture as before, and—now the next" was his graphic description of such practice. He told me of a practitioner who had related to him that he had seen 100 patients during the course of the evening, and then "went to bed exhausted and heartily ashamed of himself." This sort of thing must be bad for the public and bad for the profession. At one interview a possible abuse was brought to my notice. Medicine enough for a whole week could be prescribed beforehand so as to avoid frequent visits, when the effect of this treatment would not be properly watched.

The High Proportion of Women Workers.

I now went to a partisan of the Act who has a list of 1600 insured persons. It became clear that for the practitioner whose patients belonged mainly to the working class the Act had brought about a revolution in the conditions of payment, but I learned that in Nottingham the position was not actually as favourable as that in some other towns because of the large proportion of female workers. These constituted the weak side of the health insurance scheme, both as regards the amount of work imposed on the practitioners and the drain on the insurance funds. An enormous majority of these women workers are badly paid: 10*s.* a week is the general figure, and some earn less; only a few earn as much as £1 a week. When the worker is a young woman living in her home with parents, brothers, and sisters also at work, the joint weekly income of the family may amount to £3 or £4. If the mother is not an employed person, but is a good housekeeper and can remain at home to superintend regularly the spending of this money wisely and economically, the family will be well fed and clothed. But this is rarely the case, and a properly cooked dinner is not often forthcoming in such households. It is deplorable, from the public health point of view, that so many married women are all day working in the mills instead of attending to their home duties. The little leisure these women can enjoy has to be devoted almost wholly to house cleaning, and this is much neglected during the week in too many cases. As there is rarely time to cook food properly, cheap "snacks" are bought out of doors, eaten anyhow and anywhere. Thus these workers are not properly fed, and a physical breakdown is too often the consequence. There are also a large number of women workers who have no homes of their own. They are therefore obliged to board in small cottages where they generally pay 7*s.* 6*d.* a week for their bed and board. Of course, they cannot expect much for so small a sum, and yet in too many cases the payment of this money only leaves them 2*s.* 6*d.* a week for clothes and all other requirements. The pleasures of life are sadly to seek in these women's existence. To complicate matters further, there are many more women than men at Nottingham—more than the general figures of the English and Welsh populations warrant. The Census of 1911 sets forth that for every 100 males there are 115·9 females in Nottingham. In 1891 it was 100 males to 120 females. Then the proportion went down to 100 males to 114 females in 1901; but now the number of females is again on the increase. The ratio of males to females in England and Wales is at the present time about 100 to 106·8. In Nottingham city there are now 121,604 males and 140,959 females. Further—and this bears directly on the subject—the women who make up this excess are all industrially employed, and are therefore insurable. From the clerk of the Insurance Committee I endeavoured to ascertain what was the proportion of females among the insured persons. No such estimate has yet been made, and it will take a very long time to go through and classify the 95,000 insured persons. In the absence of any precise figure to go upon, and judging very roughly, it was thought that at Nottingham about 40 per cent. of the insured persons were females, but I obtained evidence elsewhere, which I will ultimately submit, showing that the proportion of insured women is higher.

The panel practitioner who brought the question of the large female population of Nottingham to my attention assured me that he attended three women patients for one man. This does not mean that his list of 1600 insured persons consisted of 1200 women and 400 men. Doubtless the proportion of men was much more than a quarter of the whole, but it was the women who fell ill and who were constantly coming for advice. He did not suggest malingering, and even went so far as to say he did not believe that one of these women workers enjoyed absolutely good health; they were always more or less ill, though not from such forms of acute disease as would prevent them from working. They suffered from anæmia, constipation, debility, bad teeth, and dyspepsia. They could still work, and he did not find that they were particularly anxious to be placed on the sick list; they were rarely confined to their bed.

A Panel Practitioner's Routine.

There was not much outdoor work, said the same informant, to be done in visiting patients in their homes, but there was always a great crowd both of men and women at the surgery who came with minor complaints. His time was too largely taken up by insignificant cases, and it seemed to me from much confirmatory evidence that his position typified that of many of his colleagues. Such contract work has lowered the scientific standard of medicine and put a premium upon some routine of prescribing. Of course, it will be said that the evil must be increased where practitioners have too many names on their lists, but this does not occur in any marked way in Nottingham. It is true that some practitioners in Nottingham—not many, but a few—have lists of more than 2000 insured persons, and I found the opinion growing that it was nearly impossible to attend properly to such numbers, particularly when the frequent illness among the women workers is remembered. The heat in some of the lace factories and the nature of the work done generally appear to damage the normal appetite. These women, I was told, had no zest for their food, and consequently consumed a fabulous amount of pickles. Speaking generally, there is an unusual amount of minor sickness in Nottingham which greatly increases the work of the panel practitioners.

(To be continued.)

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Medical School on its University and Clinical Side.

THE University session is now in full swing both at the University itself and at the various hospitals associated for teaching purposes with the medical school. The changes in the staff are comparatively few. The chair of clinical medicine, which remained unfilled for some time after the expiry of the term of office of Professor Judson S. Bury, has been filled by the election of Professor E. S. Reynolds to the office. The professor began his lectures this term. Dr. Graham Brown also began his work as lecturer on experimental physiology in the University. Special provision had to be made for instruction of those candidates preparing for the Diploma in Psychological Medicine granted by the University. The number of new entries for the University degrees exceeds that of last year. The number of women students seems to be on the increase.

A Better Manchester: The Housing and Sewage Problems.

There has lately been an urgent appeal in the lay press for a "better Manchester," and various suggestions have been made. The crux, however, is in the housing problem and the proper accommodation of the people. The sanitary committee has erected in the congested district of Hulme on land acquired some time ago 40 houses of two-storey cottage flats, consisting of living-room, one bedroom, and

scullery of good proportions, with the proper sanitary accommodation for each, and 50 cottages, each with a living-room, two bedrooms, and a scullery. The rental of the smaller flats is fixed at 4*s*. 6*d*. per week and of the larger 5*s*. 9*d*. per week. The estimated cost of the whole is about £16,000. Practically all the tenements have been let. The main drainage scheme promoted by the rivers committee of the corporation is steadily making progress. Besides improving the bed of the river Medlock the great drainage scheme is conceived on such lines that it will serve Manchester for another 50 years. The cost of the present extension will not be less than £1,000,000, and this, added to the previous expenditure by the rivers department, will make the total outlay equal to £2,500,000. The new sewers on the south side of the city are about a mile and furlong in length, diameter 3 feet, while the depth below the surface varies from 41½ feet at Stockport-road to 30 feet at Wilmslow-road. The work of construction is continued night and day, about 180 men being employed.

The Clergy on Sport and Recreation.

At a recent conference held in Manchester the attitude of the Church towards sport and recreation was discussed. One speaker expressed the opinion that recreation had become a danger because it was uncontrollable. Some games were surrounded by a bad atmosphere. The remedy was not to ban the game, but to clear the atmosphere. The Rev. F. H. Gillingham, vicar of Bordesley, and a well-known member of the Essex county cricket team, regretted that much of the sport to-day, instead of being a recreation, had become a huge financial concern; the evil of gambling had crept in, while the spirit of speculation was fanned by newspapers of a special class. To-day there was a tendency to develop a few specialists rather than to encourage the many to attain a higher physical standard. The primary idea of recreation as a means of counteracting the stuffy atmosphere of the office and the restricted chest was largely lost sight of in the mad competition for medals and cups. He suggested that it would be far better for the Olympic Fund to be used for buying playing-grounds near great cities. The clergy should go within the pale and take an intelligent interest in sport. Playing games helped a clergyman to keep fit, taught him to understand the men among whom he worked, and enabled him to exercise an influence upon the man with whom he played. The Bishop of Birmingham said he would rather that all the people he saw in the hall were able to run 100 yards in 12 seconds than that one of them should be able to do it in 9 4-5 seconds. —The Bishop of Carlisle (Dr. Diggle), speaking at the Old Mancunians Association, expressed himself as follows: "When people talk to me about working men going to football matches and kinematograph shows to get some sort of movement in life, all I can say is: My entire sympathies are with them, and if I lived their life of drudgery I should do the same. If you are to stop the emigration into the towns and across the seas you must in same way or another provide, not parsonic recreations, but the popular recreations which are produced by the people for the people."

Oct. 21st.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

St. Luke's Day Service.

SUNDAY being the day after St. Luke's day there was a special service at St. Luke's Church for medical men, at which there was a large attendance, many coming in their university and college robes. Among the non-medical members of the congregation were the Vice-Chancellor of the University of Liverpool and the chairman of the Liverpool Royal Infirmary Committee. An interesting and eloquent sermon was preached by the Bishop of Durham. The service was conducted by the Bishop of Liverpool, the Rector of Liverpool, and the Vicar of St. Luke's Church. The Bishop of Durham spoke of the claim the profession had to the grateful and reverent regard of the public, both on account of their skill and of their self-sacrificing service. He went on to relate his personal experiences during an illness, and paid a grateful tribute to his medical attendant and nurse. A collection was made on behalf of the Royal Medical Benevolent Fund, which amounted to over £30.

Electricity for the Continuous Sterilisation of Milk.

It is stated that Professor J. M. Beattie and Mr. F. C. Lewis are awaiting the necessary plant to complete their experiments on a commercial scale. The experiments began in 1911, and the investigators have established that the exposure of milk for a very short time to a high tension current caused effective sterilisation. The advantages of the process are that the milk is not heated unduly, no coagulation can occur, and a continuous stream of milk can be sterilised. All colon and allied bacilli were found to be destroyed, and there was an enormous destruction of bacteria of all kinds; the organisms left alive were, so far as could be traced, air-borne and non-pathogenic. Enzymes were not destroyed, milk-sugar was slightly increased, mineral matter slightly decreased, and the acidity calculated as lactic acid was very slightly increased in the sterilised milk. The taste of the milk was not altered. Both natural and artificial contamination with tubercle bacilli can be rendered harmless. The difficulties still to be got over are largely in the handling of the milk for distribution so that reinfection may be prevented.

Lease of the Abattoirs.

Repeated attention has been called to the presence of slaughter-houses in crowded areas in Liverpool. The matter of the lease of the Trowbridge-street abattoir and the trades connected with it comes before the city council this week, and the action taken by the city council is watched with much interest. The council of the Liverpool Medical Institution at a special meeting passed the following resolution:—

That this meeting reaffirms the view that it has already expressed, that the slaughtering of animals as carried on in the city is eminently undesirable and contrary to the interests of public health.

A copy of this resolution is to be sent to the town clerk.

Oct. 21st.

BRISTOL AND WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

University of Bristol.

AT a recent meeting of the council a resolution was passed expressing deep regret at the resignation of the chairmanship by Mr. Lewis Fry, Mr. George A. Wills being elected in his stead. The Vice-Chancellor reported that an offer of £5000 had been received from someone, who wished to remain anonymous for the present, towards the foundation of a residential college for men students, provided that the council saw its way to raise enough money to found a college for not less than 25 students. A report by the professor of chemistry shows that of 13 students who have obtained honours since the foundation of the University 10 are holding important research and industrial posts, the remainder being occupied in post-graduate investigations in Bristol.

Bristol Medico-Chirurgical Society.

At the annual meeting of this society Professor Walter C. Swayne resigned the chair to his successor, Dr. P. Watson-Williams, whose inaugural address dealt with the association between diseases of the nose and those of the eye. The remarks with which he opened his discourse included a brief sketch of the evolution of specialism in medicine. He showed that the orbit might become infected as a result of nasal disease through the maxillary antrum, the ethmoidal cells, or the frontal sinus; while antral dis-ease might infect the lacrymal duct, and the optic nerve might become implicated in inflammations of the sphenoidal sinus. All these relationships were exemplified by some admirable lantern slides. Dr. Watson-Williams concluded his address by pleading for a more generous recognition of the need for special study of the upper respiratory tract and its diseases in the medical curriculum. The secretary and other officers presented their reports, which are not altogether reassuring from the financial point of view, though the membership is well maintained and the library is in a flourishing condition. The Vice-Chancellor of the University, Sir Isambard Owen, who was present, was able to give some interesting details as to the buildings in which the library will be housed when the projected extension of the University is completed. The premises which at present contain the books will have to come down to make room for the new buildings, but the

Vice-Chancellor assured his hearers that adequate accommodation would be found for the library during these changes. Two alterations were made in the rules of the society, one being designed to allow of the holding of afternoon meetings and the other to secure for the society's journal the right to publish all papers read at its meetings.

Sanatorium for Tuberculous Bristol Children.

Representatives of the health, education, and insurance committees of Bristol, in conjunction with the Civic League, are considering the foundation of a sanatorium for tuberculous children, and a house at Kingswood has been inspected with a view to converting it into a temporary sanatorium. It is hoped that this, or at any rate the permanent building, will include accommodation for cases of surgical tuberculosis, a matter in which Bristol, like many other cities, is wofully deficient.

Bristol Insurance Committee: Work of the Medical Referee.

The excellent work done by Dr. Bertram M. H. Rogers, the medical referee appointed by the Bristol Insurance Committee to consider cases of alleged malingering and kindred matters, has been mentioned in these columns from time to time. The Insurance Commissioners having suggested that Dr. Rogers's appointment should terminate, the Local Committee report that they consider this step inadvisable in view of the valuable work done by the medical referee, and also because the local panel was formed only on condition that a referee was appointed. They have put forward a temporary scheme to hold good till the Commissioners have established the matter on a permanent basis.

Barnstaple Guardians and Vaccination.

At the last meeting of the Barnstaple board of guardians a discussion took place in reference to a communication received from the Blackburn board of guardians on the subject of vaccination. The Blackburn board sought support for a resolution regretting that recent legislation had made the vaccination law practically inoperative, and asking the Government to appoint a committee to inquire into the carrying out of the clauses of the Act of 1905 relating to conscientious objectors. Eventually it was decided, by the casting vote of the chairman, to support the resolution of the Blackburn union.

Wilts County Asylum.

Mr. John Ireland Bowes, the medical superintendent of the Wilts County Asylum, Devizes, has recently resigned his appointment after 30 years' service. During the period of time Mr. Bowes has been connected with the institution the building has been very largely increased, and the patients have more than doubled in number.

"Miners' Phthisis" in Cornwall.

At the last meeting of the Cornwall sanitary committee it was reported that during the years 1911, 1912, and 1913 (the last year having been averaged for the last three months), 382 deaths were caused by "miners' phthisis." These figures showed a slight increase during the past 11 years.

The Treatment of Pulmonary Tuberculosis.

The Somerset county council has decided to acquire a site for a permanent sanatorium at Dulcote, near Wells, at an estimated expenditure of £1660.

Presentation to a Medical Practitioner.

At St. Colomb (Cornwall) on Oct. 15th Mrs. Vyvyan, of Trewan, on behalf of the members of the St. Colomb Red Cross class, presented Mr. John Ronald Rigden Trist, L.R.C.P Lond., M.R.C.S. Eng., with some medical books as a mark of regard and esteem for his services as honorary instructor.

Oct. 21st.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The Royal Orthopædic and Spinal Hospital.

THE general committee in its annual report, to be presented at the annual meeting on Oct 30th, points out that the time has arrived when the rebuilding of the hospital should be undertaken. The provisional scheme provides for the erection of a suitable building upon the present site, an increase of beds from 30 to 50, a modern equipment, and repayment of the mortgage debt on the out-patient department of £2800. The total cost is estimated at about £30,000. The committee points out that the present building is quite unsuited for the many operations performed, in which the most rigid asepsis is essential. The treatment of surgical tuberculosis, which forms a large proportion of the work, needs a building with a modern system of ventilation and lighting. The number of patients has scarcely been affected by the operation of the National Insurance Act—indeed, the number of in-patients and of operations has substantially increased.

Hospital Saturday Fund.

The total of this year's collection is £22,108 13*s.* 2*d.* Misunderstandings and unsettlement caused by the National Insurance Act accounted for upwards of 150 firms discontinuing the collection, at least temporarily, but the majority of these have now decided to continue their subscriptions. As in former years, it has been decided to distribute £10,000 among the various hospitals and nursing societies. The more important of the sums allocated are to the General Hospital £3150, Queen's Hospital £2100, General Dispensary £1010, Children's Hospital £800, Eye Hospital £350, Women's Hospital £500, Orthopædic Hospital £300, Ear and Throat Hospital £125, and Jaffray Hospital £400.

Oct. 21st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Edinburgh School of Medicine for Women: Opening of New Anatomy Rooms.

IN connexion with the medical education of women in Edinburgh an important development was inaugurated on Oct. 18th with the opening of the new anatomy rooms for the Edinburgh School of Medicine for Women, Surgeons' Hall. The new anatomy room, which is situated at the back of the main block, measures 25 feet by 22, and has accommodation for six dissecting tables. The bone room, which is immediately behind the dissecting room, measures 22 feet by 10. The Principal, Sir William Turner, declared the rooms open, after a short address by the dean of the school, Professor William Russell, who has just been appointed to the Moncrieff-Arnott chair of clinical medicine in the University of Edinburgh.

Scarlet Fever Outbreak in Edinburgh.

Dr. A. M. Williamson, the medical officer of health, states that the outbreak, which last week appeared very threatening, 192 cases being reported in seven days, is now at an end. It lasted about a fortnight, and was limited to the south side of the town. The milk-supply, to which the source was traced, was cut off, and this step was immediately followed by a cessation of non-contact cases being admitted to the City Hospital. On Saturday last only one case was notified, and as things have now returned practically to the normal, the prohibitive order in connexion with the milk-supply has been withdrawn.

Edinburgh School Board and Physically Defective Children.

The board have purchased a piece of ground to the west of the city, adjoining the Gorgie School, roughly 1222 square yards in area, whereon they propose to erect a special school for physically defective children. A school of the same kind is in contemplation for the north side of the city. The net cost to the board for feeding necessitous school children amounted to £1861 5*s.* 6*d.*

Sanatorium for South-Eastern Counties of Scotland.

The Local Government Board recently received representatives from the county councils of the counties of Berwick, Haddington, Linlithgow, Midlothian, Peebles, Roxburgh and Selkirk to discuss the terms of a draft order prepared by the Board providing for a combination of these counties for the erection of a sanatorium. It was arranged that a representative of the county councils should adjust with the Board the necessary amendments, and that when this matter is completed the draft order as amended should be submitted to the individual counties for their approval.

Inaugural Lecture of Professor T. K. Monro at Glasgow University.

Dr. T. K. Monro, the recently appointed professor of

medicine, delivered his inaugural address at the opening of the medical session last week at Glasgow University. The evolution in medicine, he said, was without doubt in an upward direction. The beneficent powers of medicine were being constantly enhanced, and the success already attained was very encouraging. He quoted Mr. John Burns, that in the three years 1909–11, 772,811 fewer deaths had occurred in England and Wales than would have occurred under the average death-rate of the years 1871 to 1880. Professor Monro indicated some of the steps by which medicine had been advanced and some of the problems urgently pressing for solution at present. It was no unreasonable optimism to hope that certain diseases which at present caused many deaths might be altogether abolished or reduced to a position of relative insignificance. He instanced scurvy, leprosy, small-pox, malarial fever, and typhus fever, and the enormous reduction in the prevalence of tuberculosis in England and Wales since Queen Victoria came to the throne and in Glasgow during the last half century. He suggested that by coöperation between the health authorities, the medical profession, and the lay public, an enormous reduction might be made in the annual mortality of Glasgow. He discussed the varying degrees of respect with which the profession had been regarded at different periods of history, and emphasised the importance of cultivating the art of observation and the value to medical men of what was called a good manner.

Robroyston Hospital, Glasgow.

The Glasgow corporation have asked for tenders for erecting the first block of the infectious diseases hospital at Robroyston, at an estimated cost of £60,000. The hospital is intended primarily for cases of small-pox, but when none is present it may be used for the isolation and treatment of cases of tuberculosis.

Insurance in Aberdeen.

There are still 2500 persons in Aberdeen who have not as yet chosen their doctor under the National Insurance Act. The Medical Benefit Committee has decided that patent medicines should not be prescribed under the Act.

Aberdeen Poor-house Hospital Report.

In his report on the Aberdeen Poor-house Hospital at Oldmill, Dr. Thomas F. Dewar, medical inspector of the Local Government Board, Edinburgh, remarks that the institution seemed clean and bright, and impressed him as being up to the standard of a general hospital. One ward on the ground floor contained epileptic patients, another cases requiring surgical dressings, ulcers, and the like. Phthisis was treated in wards set aside for that purpose. Both the female and male venereal disease wards were empty. About 30 confinements occur in the hospital per annum. The operating room was extremely satisfactory, although there had been so far only about five operations in it. The infants and older children were well nourished and browned with the sun. One child recently cured of lupus in the cheek seemed to owe its recovery to sun treatment.

Oct. 22nd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Royal College of Physicians of Ireland.

AT the annual meeting of the Royal College of Physicians on Oct. 18th (St. Luke's Day) Dr. C. E. FitzGerald was re-elected for a second term of office, and the other College officers were elected. In the evening the festival dinner was held in the College Hall, and was partaken of by some 29 Fellows and 70 guests. Dr. James Little proposed the toast of "The Guests," to which the Lord Chancellor of Ireland and the President of the Royal College of Surgeons in Ireland replied.

The Annual Report of the Local Government Board.

I may be permitted to supplement your notice of the annual report of the Local Government Board for Ireland[1] by reference to one or two other points of interest. According to the figures quoted there has been a steady decrease in pauperism for several years past, amounting to nearly 25 per cent. in five years. The total number of persons who received indoor or outdoor relief in 1908–9 was 102,587; in 1912–13 it was 77,726. In March last 2589 children were boarded out by Poor-law guardians, while there were still 7438 in workhouses. A very pleasing feature of the boarding-out system is that in many cases the children are adopted by the foster-parents and treated as if they were really members of the family, the children gaining all the advantages of kindly homes. The rate of infant mortality in the workhouses is very high. During the year 791 deaths occurred of infants under 1 year of age. Nursing in workhouses is not yet in a satisfactory state; there are still 12 workhouses in which no trained nurse is employed. The salaries of dispensary medical officers, together with the remuneration paid to temporary medical officers, amounted to £121,801, as against £120,068 in the previous year. 92 unions have now adopted scales of salaries, more or less adequate, for their medical officers. As the Board states, "much yet remains to be accomplished." There was an increase from 165,262 to 171,793 in the number of new cases attended by dispensary medical officers at the patients' homes, and a decrease from 487,516 to 476,931 in those attended at dispensaries. There was a decrease from 77,379 to 69,480 in the number of vaccinations and revaccinations performed. This is due to the failure of guardians in many instances to carry out the laws governing vaccination as part of a campaign against vaccination. The Local Government Board has been content to "deplore this attitude on the part of responsible local authorities, and warn them of the serious responsibilities in which they will become involved should an epidemic of small-pox occur in their districts." The activity of the Board in regard to tuberculosis is hardly so real as might be inferred from perusal of the report. The Board, for instance, deplores that notification of tuberculosis is not compulsory throughout the country, and as an instance of the inefficiency of the present system states that in both Dublin and Belfast the notifications fell short of the number of recorded deaths from phthisis. What the Board omits to mention is that this is a necessary result of the order issued by the Board itself to govern notification in Dublin and Belfast, and the other areas which adopted Part I. of the Tuberculosis Prevention Act (1908). By that Act the Local Government Board was empowered to prescribe under what conditions notification was to be practised. The order issued was to the effect that notification should only be made in cases of tuberculosis of the lung, at any stage at which the sputum was, in the opinion of the practitioner in attendance, liable to communicate the disease; and further, only when the patient habitually slept or worked in the same room with another person not similarly affected, or was employed in handling, preparing, or distributing milk, meat, or any articles of human food intended for sale to the public. It is obvious that notifications limited by such conditions can furnish no information of value either for statistical or sanitary purposes. Again, the Board has adopted a strange attitude with regard to domiciliary treatment under the sanatorium benefit. Instead of dealing with the question in a general order as was done in England the Board has directed that each individual case where it is proposed to give domiciliary treatment is to be reported and dealt with on its merits. The result has been to place grave obstacles in the way of this form of treatment.

Dublin Slums.

The Lord Mayor of Dublin has announced that, following a deputation from the Irish Association of Municipal Authorities, the Secretary for Ireland is about to appoint a Departmental Committee to inquire into the nature and extent of the slum problem in Dublin.

The Abbey Sanatorium, Belfast.

The Belfast board of guardians has agreed to the transfer of the Abbey Sanatorium to the city corporation as and from Oct. 1st, 1913, subject to the terms being satisfactorily arranged between the two bodies and a proper agreement being drawn up embodying the terms agreed upon, and the matter is at present being considered by subcommittees of each of these bodies.

Scarlet Fever Epidemic in Belfast.

At a meeting of the Belfast board of guardians held on Oct. 14th attention was called to the widespread, continuous, and alarming outbreak of scarlet fever in Belfast. It was stated that, in addition to the ordinary municipal fever hospital at

[1] THE LANCET, Oct. 4th, p. 1018.

Purdysburn, where there are now over 200 patients, the Poor-law hospital at the Belfast workhouse contained on the day the guardians met 172 cases. It was directed that the recommendation of the infirmary committee should be sent to the city corporation, viz. :—

That the city corporation should make provision for the reception of cases of scarlatina which are being received into the workhouse, of which there has been a high number for many months.

Death of Surgeon-Major Robert Dick, I.M.S. (ret.).

I regret to announce the death, at the advanced age of 82 years, at his residence, Garry, Ballymoney, co. Antrim, of Surgeon-Major Robert Dick, M.D. Q.U.I., F.R.C.S. Eng., on Oct. 14th. The son of Mr. Robert Dick, of Garry—an extensive farmer—the deceased was educated at Ballymoney, and subsequently at Queen's College, Belfast, having entered that institution as a scholar in the year it was founded, 1849–50. A contemporary scholar was the late Professor James Cuming, M.D., and another fellow student (who entered the next session) was the celebrated Sir Robert Hart, Bart., who was the most decorated man of his time. Dr. Robert Dick was a scholar all through his college career, and in 1853 he graduated in the Queen's University of Ireland, taking his M.D. with honours. He afterwards became a Member and Fellow of the Royal College of Surgeons of England. He early entered the medical service of the Old East India Company, which afterwards became merged into the Indian Medical Service. In his early career in the East he took part in the Persian campaign, and later he passed through the Indian Mutiny. Afterwards he was stationed at Poona, but his health becoming impaired he retired on pension 41 years ago, and in after years he lived quietly at his residence at Garry, Ballymoney, taking very little interest in outside affairs. He was buried on the afternoon of Oct. 16th in the Old Church Burying Ground, Ballymoney, a large number of relatives and friends paying him the last tribute of respect. The deceased was unmarried.

Serious Charge against a Nurse.

At an inquest held in Belfast on Oct. 18th in reference to the death of a young woman, aged 24 years, which occurred on Oct. 16th after childbirth, the jury found that death was caused by puerperal septicæmia due to carelessness and want of skill on the part of the nurse. The coroner said he was determined to put down unskilful nursing, as the National Insurance Act provided for proper maternity treatment. The deceased woman was confined on Oct. 10th, the nurse attending. On the 13th a medical man was sent for, as the woman did not seem to improve, and he advised her removal to hospital, but she was unwilling to go. On the 15th another medical man saw her, and she was removed to the Maternity Hospital late at night, where she died next day.

Resignation of Mr. Thomas Leary.

Mr. Thomas Leary, J.P., one of the best-known medical men in the North of Ireland, has, after almost 52 years' service, resigned his post as medical officer of Castlederg and Killeter (No. 1) District Dispensary, co. Tyrone. On Oct. 17th the Castlederg board of guardians passed unanimously a resolution regretting Mr. Leary's resignation, and recording their appreciation of his long and faithful services.

Oct. 21st.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The International Congress on First Aid and Ambulance Work.

(*Concluded from p. 1027.*)

AT the closing sitting of the Congress it was decided to elect an international committee for first aid, which would devise means for effective coöperation in the event of great disasters, such as earthquakes, floods, epidemics, conflagrations, and the like, and for giving prompt assistance to sufferers, just as the Red Cross societies do in war time. After the Congress was over numerous members decided to stay in Vienna for another few days, for on Sept. 19th the Congress of the German Naturalists and Medical Men took place, and proved an important and interesting meeting.

Resuscitation of Persons Apparently Dead from Various Forms of Asphyxia.

Dr. Kuhn, of Berlin, discussed this subject, which forms the basis of many gruesome stories of persons having been buried alive by mistake. His paper emphasised the necessity of applying modern methods of first aid (artificial respiration and electrical stimulation of the heart) more extensively than hitherto, especially in cases of apparent death from the action of poisonous gases, such as carbon dioxide or carbon monoxide, or from submersion in water, or from electric shock or lightning stroke. Efforts for resuscitation ought not to be hastily abandoned, for even after hours of prolonged work the result may be successful, since experiments conducted by Kuliabko and Hering have shown that human hearts removed on the necropsy table could be made to beat from 8 to 11 hours after death.

The Dangers of Sponge-fishing.

Dr. Flégel, of Crete, said that the use of modern methods in sponge-fishing increased the danger of this occupation. Some 100,000 persons were engaged in it, especially off the coasts of the Mediterranean and Adriatic. The ancient methods of working either with a trident or a search-rope, or when naked divers were employed, required the work to take place in shallow water. The modern methods, involving the use of diving apparatus at great depths, caused much loss of life. The Governments of Austria-Hungary and Egypt had recently prohibited these methods, but in Greece, Tunis, and Turkey the sponge-gatherers had no protection by law and no sufficiently strict regulations.

First Aid on the Austrian State Railways.

Dr. Bogden, the chief medical adviser of the Austrian State railways, read a paper on the Organisation of First Aid on the State Railways in this country. He said that boxes containing first-aid outfits were now available on each express train, and at each important station or junction such an emergency case was ready for use. Instruction in applying first aid was given to the railway servants and officials in special Samaritan classes. Hospital cars and ambulance cars have been added to the rolling-stock of the State railways, so that each district railway office can be supplied with them at very short notice, and special cars have been built for the conveyance of infectious patients. The recent political complications have had the effect of causing the arrangements in this respect to be brought to a high degree of efficiency.

Regulation of the Admission of Patients to the Hospitals.

The difficulties of finding a bed for a patient requiring first aid in hospital were well illustrated in a paper by Dr. Hofmokl. He said that in consequence of the great number of persons seeking admission to hospitals, and the relative scarcity of beds, especially in the large towns, it was necessary to secure a bed in one of the charitable institutes or in a hospital before the patient was brought there. Especially in cases of accident, suicidal attempts, and the like, it was not possible to take a patient from one hospital to another in search of a vacancy. Here coöperation of the police, the ambulance corps, and the hospital boards was necessary. In Vienna there was a special administrative office, which kept account of the vacancies in all the Vienna hospitals, and was informed by telephone as quickly as possible whenever a hospital bed became vacant or was reoccupied. Through the agency of this office a bed might be secured by the police, by the first-aid ambulance, or by practitioners, but in order to avoid abuse a patient who had had a bed secured for him without real necessity might be dismissed at once by the hospital medical officer. A decentralisation of the conveyance of sick persons was necessary in large towns, and it was desirable that special vehicles which could be disinfected after use should be provided more frequently than at present for the removal of infectious cases.

First Dressing of Injuries.

A number of papers dealt with the first dressing of injuries, a subject which has received much attention during the recent war in the Balkan regions. The experience gained during the great battles of these campaigns was embodied in a paper entitled "First Aid on the Battlefield," in which it was recommended that wounds should receive aseptic dressing, after using tincture of iodine freely on

and around the injured parts, and after checking hæmorrhage. All major surgical interference should take place in a well-equipped hospital, after the shock of transport had subsided. Another paper by Dr. Rosner, of the Vienna Rettungsgesellschaft, dealt with the ordinary injuries of every-day life. He advised that such wounds should be neither probed nor touched with the fingers, and that prolapsed organs should not be replaced but carefully supported. The washing out of injured parts ought not to be undertaken when first aid was given. A soft, pliable, absorbent, and aseptic material (absorbent sterile gauze) was the best dressing for all purposes; it could also stop hæmorrhage if applied with a proper degree of pressure. Immediate immobilisation after reducing a fracture or a dislocation should take place before removal of the patient. It was very important that the first dressing should be most carefully applied, as it often determined the fate of the sufferer.

The Increase of Suicides.

A lamentable fact was clearly brought out by Herr Wortmann, of Vienna, in a paper on Suicides and Attempts at Self-destruction. He said that there was a constant and steady increase in the number of persons who deliberately took their own lives. Various reasons have been assigned for this social abnormality, but no satisfactory explanation has been given. Mental depression seemed to be present in each case, and attempts to strengthen the will-power of weak-minded individuals (anti-suicide societies) appeared to have been beneficial in some instances. It was a singular fact that the number of suicides increased in summer and during the bright months, from May to August, at least in this city, where 1387 cases were attended to by the Rettungsgesellschaft last year. Herr Wortmann attached much importance to the collection of statistics from all civilised countries as to the motives for suicide, and denounced the modern system of education, which, he said, did not go far to produce strong characters, but rather tended to cause nervous breakdowns.

Prevention of Panic among the Audience at Public Entertainments.

An interesting paper by Herr Greil summarised the modern view of the requisites for the safety of a crowded audience in public buildings. He strongly recommended that such buildings should be made fireproof; that the stage should be separated from the rest of the house by an iron curtain; that only electric light should be used, and that the current for this purpose should be derived from two different sources. No tenements or flats should form part of these buildings or be annexed to them. Heating should be by means of hot air, hot water, or steam. No smoking should be allowed while entertainments were in progress, and a detachment of firemen should be in attendance at each performance. The building should not contain more than three persons per square metre, and for every 100 visitors one gate or door should be provided. Good ventilation, a supply of pure drinking water, and sufficient lavatory accommodation were also required.

Oct. 18th.

ROYAL DENTAL HOSPITAL OF LONDON. — The annual dinner of the staff and past and present students will be held on Saturday, Nov. 22nd, at 6.30 for 7 o'clock, at the Hôtel Métropole (Whitehall Rooms), under the presidency of Mr. Rees Price. Applications for tickets should be made to the Dean at the Royal Dental Hospital, 32, Leicester-square, London. The medical committee will be "At Home" to all old students of the hospital on the same day from 2.30 to 5 P.M.

RANKING MEMORIAL, TUNBRIDGE WELLS.— In connexion with the memorial in the Tunbridge Wells General Hospital to Dr. J. E. Ranking a bed has been endowed, and instead of a medallion portrait as at first decided upon a statuette is to be provided. Any balance of the money subscribed will be devoted to the Samaritan Fund, which exists for the benefit of those patients who, though well enough to be discharged from the hospital, need to be sent to a convalescent home or to be assisted in some other way.

Obituary.

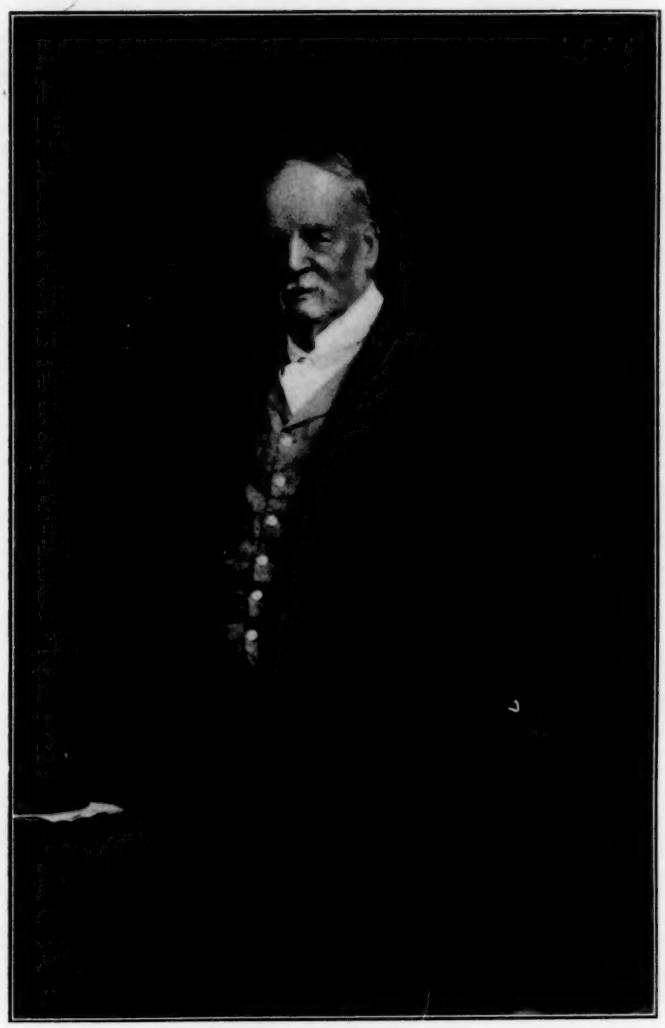
SIR JOHN BATTY TUKE, M.D. EDIN., F.R.C.P. EDIN., F.R.S.E., LL.D., D.SC.,

FORMERLY REPRESENTATIVE OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH ON THE GENERAL MEDICAL COUNCIL AND M.P. FOR THE UNIVERSITIES OF EDINBURGH AND ST. ANDREWS; MORISON LECTURER ON INSANITY AND MENTAL DISEASES.

Sir John Batty Tuke died at his residence, Balgreen House, Edinburgh, on Oct. 13th, in his 79th year. He was born at Beverley, Yorkshire, on Jan. 9th, 1835, being the eldest son of John Batty Tuke of that town, and received his academic education at the Edinburgh Academy and his professional education at the University of Edinburgh. He qualified in 1856 as L.R.C.S. Edin., and took his M.D. degree at the University in the same year. He went to New Zealand in 1857 as civil medical officer to the 65th (2nd York. N. Riding) Regiment, but on the outbreak of the Maori war in 1860 he became senior medical officer of the Colonial troops, serving until the end of the war. In 1863 he returned to Edinburgh and entered on practice, becoming assistant physician to the Royal Edinburgh Lunatic Asylum. In 1865 he was appointed medical superintendent of the Fife and Kinross District Lunatic Asylum, where he remained until 1873 when he returned to Edinburgh and entered on the practice of mental diseases, in which he had already acquired a recognised position, for in 1865–66 he published in the *Edinburgh Medical Journal* his essays on the Insanity of Pregnancy, Puerperal Insanity, and the Insanity of Lactation, and in 1869, in conjunction with Professor Rutherford and in the same journal, a remarkably acute study of the morbid appearances met with in the brains of 30 insane persons, wherein he helped to lay the foundation for the modern doctrine of a physical basis as underlying all mental aberrations. He also published in 1873 his work on the Morbid Histology of the Brain and Spinal Cord as observed in the Insane, and in 1874 was appointed Morison lecturer on insanity at the Royal College of Physicians of Edinburgh, whose Fellowship he had received in 1871. At this period he became associated in the management of the Saughton Hall Asylum at Edinburgh. He remained director of this asylum until on the removal to a new site a few years ago he was succeeded by one of his sons, Dr. J. Batty Tuke. His influence had much to do in hastening the more enlightened and humane methods of dealing with the insane which characterise modern practice. In 1894 he delivered the Morison lectures on the Insanity of Over-exertion of the Brain, giving rise to the appreciation of what is now known as "brain-fag." He also contributed the articles on Insanity and Hysteria to the ninth edition of the Encyclopædia Britannica.

Sir John Batty Tuke's public work included the representation for 25 years of the Royal College of Physicians of Edinburgh on the General Medical Council, and of the Universities of Edinburgh and St. Andrews in the Parliaments of 1900 and 1906. He retired from Parliament in 1910. In 1898, while he held the office of President of the Royal College of Physicians of Edinburgh, he received the honour of knighthood. He had been President of the Neurological Society of the United Kingdom. In 1896 the University of Dublin conferred on him its honorary D.Sc. degree, and in 1912 the Universities of Edinburgh and St. Andrews recognised his services to them in the House of Commons by conferring on him their honorary LL.D. degrees. He was also a Fellow of the Royal Society of Edinburgh.

Sir Thomas Clouston sends the following appreciation:— "Sir John Battty Tuke was one of the first men in Great Britain in the late 'sixties' and early 'seventies' to use the new histological methods of staining and section-cutting of the brain in the insane, and this gave a great impetus to the study of the pathology of our department in Scotland. His work still stands. He had the true instinct to see what was being done to advance normal histology in the anatomy and physiology department of the University of Edinburgh, and became acquainted with the methods used by John Stirling and Professor Rutherford. His clinical contributions to psychiatry in regard to the insanities connected with pregnancy were sound and practical. In those he followed the lines of the Morningside School of Skae, as also in



SIR JOHN BATTY TUKE, M.D. EDIN., F.R.C.P. EDIN., F.R.S.E., LL.D., D.SC.,
FORMERLY PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

(From a photograph by Messrs. Elliott and Fry, Ltd.)

extending the 'open door' idea in the Fife Asylum. His Morison lectures on 'The Insanity of Over-exertion of the Brain' contained much original thinking and valuable practical suggestions in regard to the importance of rest in the treatment of some of the acute insanities, suggestions that are now universally accepted. He took large views in his scientific work and not those of a narrow specialism. It was this quality of mind that led him to establish the Pathological Club when he came to Edinburgh from Fife in 1873. That club, with its informal but fresh methods, drew together and stimulated many of our young pathologists in Edinburgh. It has been fertile in good results. He was an outstanding figure from the first in the College of Physicians and medical societies in Edinburgh. He appeared in the art, literature, and law circles in the city. He always kept up the dignity of medicine, and would allow no man to disparage or to take undue liberties with him. He was a loyal friend and a formidable opponent. Undoubtedly his greatest work in Edinburgh was persuading the College of Physicians to use some of its abundant funds to establish a laboratory where all the Fellows and many of our young scientists could work without cost and under the direction and stimulation of the superintendent, Professor Sims Woodhead. The results of the work in that institution in physiology, pathology, medicine, and surgery have been for Edinburgh almost epochal. Tuke's reputation as its originator will always stand on the secure foundation of the solid work accomplished there."

An Edinburgh correspondent writes: "Sir John Batty Tuke's work in the field of the pathology of insanity was in many respects remarkable. He was a pioneer in the practical study of the subject in this country, being one of the first to apply the microscope to the investigation of morbid changes in the nervous system. Working at a time when histology was still in its infancy, he made many original observations that are now established facts of neuropathology. He anticipated by 37 years the elaborate work of Cerletti upon the convoluting of the intracerebral arterioles, and there can now be no doubt that the abnormal appearances of the brain which he described more than 40 years ago as 'miliary sclerosis' are to be identified with the condition that has recently been the subject of so much investigation and discussion under the name of *senile plaques*, although he was unable with the methods at his disposal to distinguish clearly this genuine morbid alteration from others of an artificial nature that frequently simulated it. He was the first to insist upon the anatomical unity of the arachnoid and pia mater, basing his contentions upon personal observations and arguments that remain valid. He also recognised, far in advance of his contemporaries, the important applications of bacteriology to the elucidation of the pathology of the insanities."

Sir John Batty Tuke married in 1856 Lydia Jane Magee, a sister of the Rev. Dr. Magee, subsequently Bishop of Peterborough and Archbishop of York. Lady Tuke survives him, as do also his three sons, two of whom are members of the medical profession.

PROFESSOR ROBERT KUTNER, M.D. BERLIN, C.V.O.,

DIRECTOR OF THE KAISERIN FRIEDRICH HAUS, BERLIN.

THE news of Professor Robert Kutner's death will come as a shock to all interested in the post-graduate movement, of which he was one of the pioneers and guiding spirits. Kutner was born in April, 1867, at Ückermünde, where his father was a district practitioner. After completing his gymnasium course he commenced the study of medicine at Kiel, later on—with that freedom which under the German system is permitted to all medical students—attending the Universities of Berlin and Freiburg. After graduating M.D. at Berlin he became interested in urology, and studied for a time under Guyon at Paris, Nitze at Berlin, and Dittel at Vienna, learning by personal experience the value and usefulness of graduate teaching. In 1891, having gained his "Approbation," he commenced practice at Berlin as a specialist in genito-urinary diseases, a specialty to which he continued faithful to the end. But it is as the pioneer of the graduate movement in Germany that he will be best remembered. It was Kutner who enlisted the helpful interest of Professor von Bergmann and Professor Althoff in favour of his ideal to make Berlin a gigantic centre of post-graduate study, with a central bureau, a definite, permanent graduate study institution, and affiliated institutions all over the Empire. That ideal, visioned by a young specialist who had not yet attained his thirty-first year, has since been amply realised in the establishment of the Kaiserin Friedrich Haus on the Luisenplatz, the recognised centre of the graduate movement, and one of the finest of modern German scientific institutions. It was Kutner, too, who initiated the movement for the establishment of an International Committee, finally appointed by the Vienna Congress. It was he, also, who founded and edited the *Zeitschrift für Aerztliche Fortbildung*, which is to-day one of the best and most readable of the many German professional papers, and is almost a model paper for the general practitioner. As director of the Kaiserin Friedrich Haus, secretary of the International Committee, and editor of the *Zeitschrift*, he was in constant touch with the movement. His knowledge of English, French, and Italian, his personal charm, unfailing tact, and genial personality, of which a cheery optimism seemed to be the main characteristic, made him an ideal head for the central bureau. Here in his little sanctum he was always ready to receive visitors. He gave his time unstintedly to help those who needed advice with regard to centres for study, courses, lecturers, or special facilities; he kept in close touch with all the various branches, and his counsel was always given after a careful consideration of individual wants and tastes. The energy and enthusiasm which he expended on his work in promoting the movement were almost phenomenal. He had an insatiable appetite for information with regard to the various developments of the movement, and personally visited every centre in order to draw up a handbook which should be authoritative and complete. In his own specialty, urology, he won deserved recognition, though his work on behalf of the graduate movement prevented him from giving to it all his time and attention. His efforts have been fittingly recognised both in Germany and elsewhere. On his professional attainments he gained his professorship; his work for the institute with which he was so closely connected won him distinctions from the State, while in England his efforts on behalf of the movement for graduate study were recognised by the grant of the C.V.O. But the distinction he valued most was the cordial recognition his efforts had received from the profession in all civilised countries, Japan among them, and the grateful appreciation rendered by the many graduate students whom he helped. His last illness was of short duration, and his death, on Oct. 5th last, came with the shock of an unawaited disaster. The funeral oration was delivered in the Kaiserin Friedrich Haus five days later by his life-long friends Professor Waldeyer and Dr. Albert Moll. His death is a loss to the movement for which he attempted and achieved so much—a loss which seems irreparable, since it is difficult to see who can adequately replace him.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Eduardo Wilde, the Argentine Minister to the Spanish Government. He was doctor of medicine and surgery of the Buenos Aires Faculty, and was professor of hygiene in the University. He wrote various works—Tiempo Perdido and Por Tierras y por Mares, and some thirteen years ago decided to give up his chair and devote himself to diplomacy.—Dr. Sota y Lastra, director of the Seville School of Medicine, a well-known laryngologist.—Dr. A. von Seeger, surgeon-general, of Leipsic.—Professor von Bälz, privy court councillor, of Stuttgart.—Dr. Dirr, court councillor, of Rosenheim.—Dr. Edward Schaer, professor of pharmacy in the University of Strasburg, and formerly professor in Zürich, aged 70.—Dr. Otto Lange, ophthalmic surgeon to the Ducal Hospital, Brunswick, aged 60.—Dr. H. Schwann, sanitary councillor, of Gudesberg.

SCHOOL MEDICAL SERVICE OFFICERS.—The first meeting of the group of officers engaged in school medical service, recently formed within the Society of Medical Officers of Health, will take place at the offices of the society, 1, Upper Montague-street, Russell-square, London, on Friday, Nov. 7th, at 5 P.M.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

White Bread.

HYGIENISTS have long called attention to the serious consequences of the increasing popular preference for white bread. At present dark-coloured bread is despised as "peasant's food"; in the towns the meanest workman will eat only white bread. The flour used for making this bread is obtained by passing the meal through a very fine sieve, so that it contains hardly anything but starch and cellulose. White bread, which plays an important rôle with the French people, is thus extremely poor in really nourishing food, and it is to the increasing consumption of it that many hygienists ascribe in France the racial enfeeblement, the diminution of stature, and even the present development of tuberculosis. Representations have frequently been widely made on this subject but without effect, for the bakers can provide only what the public demands. Matters have become still worse now that the grain is ground no longer by millstones but by steel rollers. The small country mills operated by a water-course or by wind are disappearing from day to day, and with them the millstones which more completely grind the grain, so that the glutinous layers of the husk were ground with the farinaceous part. Now the flour mills that have been developed by the great industry use steel rollers exclusively, which furnish a flour that sieves easily, and is all the whiter in that it contains hardly anything but starch. Dr. Monteuuis, in a recent communication to the Société de Thérapeutique, estimates that this sifting, casting away as it does the most nutritive part of the grain to the animals, represents for France a waste amounting to 400,000,000 francs a year, to which logically should be added the loss caused by the numerous diseases of nutrition due to the use of this bread—called usually "pain riche," but which from a hygienic point of view is rather "pain pauvre." The mischief is emphasised when, as is so often the case, bread is a very considerable portion of the diet.

Vincent's Antityphoid Vaccine.

The antityphoid vaccine prepared at the laboratory of military medicine of the Val-de-Grâce by Professor Vincent, in consequence of the excellent results on the French troops, reported from Morocco, has been used by the Italian military service in the Tripolitan army of occupation, which is decimated by typhoid fever. The statistics prepared by M. Cavallerleone, Médecin Inspecteur Général of the Italian army, have been communicated to Professor Vincent, who has published them. They show a very clear advantage in favour of Vincent's polyvalent vaccine prepared by the cold method of sterilising the cultures by means of ether. This vaccine has been used simultaneously with that of Pfeiffer and Kolle, a German vaccine sterilised by heat. Upwards of 16,500 soldiers have been inoculated. In 963 the heated vaccine of Pfeiffer and Kolle was used in three injections, in 1759 in two injections, and in 1960 in one injection. Vincent's vaccine demands four injections, but 4736 persons received only one, 3668 two, and 3105 three; in no case were the prescribed four injections administered for lack of time caused by the sudden departure of the troops. That is to say, Vincent's vaccine has not been administered as fully as it should have been to enable a fair comparison with the results obtained in Morocco by full injections. In spite of this, the 3105 soldiers who received three doses of this vaccine furnished only one case of typhoid fever, or 0·3 per 1000, without a death. Those vaccinated according to full requirements with the vaccine of Pfeiffer and Kolle gave 1·04 cases per 1000. The soldiers experimented on were quartered in places where their sanitary environments were similar—Derna, Bengazi, Tnara, Homs, Tobruk, and Tripoli. Many of the cases were not instances of infection with Eberth's bacillus, but with paratyphosus A or B, which explains the superior results, even with an insufficient technique, of Vincent's bacillus, which is polyvalent.

Death of Dr. L. Wickham.

Dr. L. Wickham has died at the age of 53 years. He was physician to the Hôpital des Vénériennes, an annex of the prison of St. Lazare, and was well known by his very interesting work on the application of radium to the treatment of angiomata and neoplasms of the skin. His work in collaboration with Dr. Degrais and his photographs of patients aroused considerable interest at the International Medical Congress in London recently.

Oct. 20th.

Correspondence.

"Audi alteram partem."

THE MEDICAL CURRICULUM.

To the Editor of THE LANCET.

SIR,—In your interesting review of the present position of medical education in London in THE LANCET of Oct. 11th, p. 1071, you repeat a statement which has been made with some frequency of late—that the average time taken by a medical student at the present time to obtain a registrable qualification is no less than seven years. Because I felt sure that this figure was an over-statement I have examined the records of those students who have taken out the entire curriculum at Guy's Hospital during the five years 1909–13, leaving on one side the students of the older universities whose period of study is lengthened by the circumstance that with few exceptions an arts degree is taken in addition. The result shows that the average length of time of these students—and I have included both those who have taken the M.B. degree of the University of London and the diploma of the Conjoint Board—amounts to six years and two months. 23·3 per cent. took seven years or more than seven years; 76·7 per cent. took less than seven years; and 49·6 per cent. took six years or less than six years.

From these figures no deduction is made for absence on account of ill-health. The total amount of sick leave becomes considerable if it is remembered that we are dealing with a period of six years, and that the curriculum is so full that if a student misses some important part of a course or of a particular appointment in the wards the accident is almost certain to prevent him from completing the curriculum within the minimum time. Nor do the figures take into account the extra time spent by a proportion of the best students in preparing for such higher examinations as the Primary Fellowship of the Royal College of Surgeons or the B.Sc. of the University of London.

I do not doubt that figures prepared from other London schools would show a similar result, and that, so far as London students are concerned, the statement that the average time amounts to seven years is over the mark. I think it is the experience of those schools which have substituted annual payments for a single composition fee that the effect has been markedly to curtail the time spent on the curriculum. The incentive to secure qualification is much greater when failure entails the payment of further fees than when the hospital undertakes to teach the student for the same fee, even though qualification is delayed for ten years or longer.

I am, Sir, yours faithfully,

H. CHARLES CAMERON, Dean.

Medical School, Guy's Hospital, S.E., Oct. 15th, 1913.

THE TREATMENT OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—About 30 years ago one of our great surgeons, the late Sir Patrick Heron Watson, of Edinburgh University, used to teach the students that they must treat the primary and secondary manifestations of syphilis with the greatest care, as they arose, by means of local mercurial applications, and that only when absolutely necessary to cure special serious symptoms should mercury be given internally, but that on no account must a course of mercury be given with a view to prevent the occurrence of manifestations of syphilis at a future date. Treated in this way, he considered that an attack of syphilis was not more serious than an attack of measles—in each serious sequelæ might occur, but in each only in a small minority of cases. One of the great physicians, the late John Syer Bristowe, about 30 years ago, in his text-book on medicine, says:[1] "It is admitted now that mercury does not prevent either secondary or tertiary

[1] Bristowe's Theory and Practice of Medicine, fifth edition, 1884, p. 263.

symptoms from coming on; but, nevertheless, it is certain that it has a marvellous influence in causing the removal in turn of the primary, secondary, and tertiary lesions of the disease ..... the treatment should be continued until the lesions have disappeared under its influence, and even for a week or two longer."

About 37 years ago the greatest authority on syphilis, the late Sir Jonathan Hutchinson, advised a course of mercury to be given for six months to all patients in the primary and secondary stages of syphilis (one or two grains of grey powder in the form of a pill three times a day).

At a great discussion on syphilis at the Pathological Society in April, 1876, Sir (then Mr.) Jonathan Hutchinson is reported in THE LANCET[2] to have said: "How long after the secondary stage is it possible for syphilis to be transmitted hereditarily? ..... Now I have for long made it a rule, when consulted on this point, to insist that, before marriage, a period of two years should elapse from the last of what I have considered blood symptoms. I have given this opinion to a great many persons, and may confess that it has been a constant source of anxiety lest some day some one should bring me a snuffling, spot-covered baby, and say: 'See here, you said I might marry; just look at this.' Such an occurrence has, however, never yet happened to me." Earlier in his speech Mr. Hutchinson had said: "In a case in which mercury was begun early and continued for six months, I have known the rash, which would otherwise have come within six weeks, deferred to the end of the period named. ..... I feel sure that, in certain cases in which it fails to cure, it may greatly protract the malady by increasing the distance between its stages." Now in THE LANCET of Sept. 27th, 1913, p. 917, Major H. C. French, R.A.M.C., quoted with approval: "12. The marriage of syphilitics discouraged by law under ten years from date of contracting the disease." Why is ten years necessary? Sir Jonathan Hutchinson advised two years from the last of what he considered blood symptoms. The answer is that Sir Jonathan Hutchinson was speaking of cases which had either not been treated by mercury or had had a course of mercury for only six months, but it has now become the fashion to give long courses of mercury for two, three, or more years, and this doubtless retards the secondary stage and renders it necessary to postpone marriage.

In the above quoted discussion Mr. Hutchinson said: "With regret I admit that I have never seen with my outward eye the cryptogamic germ-poison of syphilis; but to my mind's eye it is as certainly present as if I had." Now that the germ, the spirochæta pallida, has been seen, this does not, of course, in any way alter the action of mercury on the manifestations of syphilis. The fallacy of the Wassermann reaction is that when it ceases to be positive in the secondary stage it does not signify that the syphilis is cured, but only that the spirochætæ pallidæ have retired from the blood into the tissues from which at some future time they may emerge and give rise to fresh symptoms. Neither mercury nor salvarsan has been proved to *cure* syphilis, though they both have a marvellous power in removing the manifestations of syphilis.

Is it certain that these long courses of mercury do not render the tissues more vulnerable rather than less vulnerable to a future state of activity of the spirochætæ? The late Sir Samuel Wilks used to say: "Mercury is a foe to syphilis, but a friend to tertiary ulceration." Would it not be well to return to the old plan of giving mercury (and for the future salvarsan) only for the purpose of removing actual manifestations of syphilis, and not with a view to preventing subsequent manifestations? With reference to the treatment of a gumma I am uncertain whether the English surgeons have given a sufficient trial to the large doses of iodide of potassium which many years ago were used with such good effect in Scotland—namely, to begin with 20 grains of iodide of potassium in a tumblerful of water on an empty stomach three times a day, and to rapidly increase the dose to 30 and 40 grains ter die, and gradually to 60 and 80 grains or more ter die, until the gumma has quite disappeared.

I am, Sir, yours faithfully,

ROBERT S. WAINEWRIGHT, M.D. Lond.

Hove, Oct. 9th, 1913.

[2] THE LANCET, 1876, vol. i., p. 536.

CLAIMS AND CONSULTATIONS.

To the Editor of THE LANCET.

SIR,—When a claim is being made in a case where personal injuries result from an accident one of the first steps taken is to have a medical examination of the injured party carried out on behalf of the person or persons from whom compensation is sought, usually an insurance company.

In common law and employer's liability—in fact, in all cases except under the Workmen's Compensation Act—the question arises as to the payment of the usual fee for the consultation between the medical examiner and the patient's doctor. It is interesting to note that in the correspondence between the parties the legal profession invariably calls for the usual fee to be paid to the patient's doctor for being present at the examination, whilst the two medical men concerned will correspond and probably arrange for a consultation to take place.

The legality of demanding a fee for allowing a claimant to be inspected or examined will not be entered into (it may be accepted much in the same light as fees paid for "discovery of documents," &c.). The fee is not always demanded, and in some cases it is arranged that the fee will be included with the other medical charges, in the "costs of the action." Medical examiners for insurance companies know only too well how great a farce some of these "consultations" become in cases where the injuries may be trivial or *nil*, where out-and-out malingerers are being dealt with, or where a denial of liability is made on sufficiently substantial grounds.

Examinations which take place in hospital are in themselves satisfactory for the simple reason that trivial cases or malingerers are not usually found in the wards of a hospital, and the records, charts, and radiographs which are usually produced constitute the essential elements of a genuine consultation. Whilst I have occasionally been present at examinations, acting on behalf of the injured party, and have received the usual fee for doing so, I am of opinion that in all cases the fee should be included with the other medical charges in the costs of the action. When a claim is made under a personal accident policy or the Workmen's Compensation Act, any fee that is paid to the claimant's doctor for being present at an examination is done so at the expense of the patient only.—I am, Sir, yours faithfully,

Castle-court, E.C., Oct. 13th, 1913. J. J. SCANLAN.

THE NATIONAL INSURANCE ACT AND MEDICAL REFEREES.

To the Editor of THE LANCET.

SIR,—I should be delighted to defer to Dr. Robert Saundby, and it would save me and other medical examiners much time and trouble if the interests of medical examiners alone had to be taken into consideration and the interests of other medical men ignored. As it is, medical examiners cannot consider only themselves, and any medical examiner who wilfully examines the patient of another medical man without his consent cannot expect to be met in consultation by that medical man on some future occasion, when it is highly necessary to obtain a medical history of a case.

In the 20 years during which I have constantly examined in London it has always been recognised that a medical examiner, when knowing the name of a private medical attendant, should, as a matter of courtesy, notify him that a medical examination is desired, and that the examiner will be pleased to meet the medical attendant in consultation. In common law, third party, and employers liability cases, there is no statutory right to demand an examination, and the claimant is not obliged to submit himself to examination; therefore either he, or his solicitor for him, usually refuses an examination except in the presence of the medical attendant and on payment of the usual consultation fee of a guinea.

Under the Workmen's Compensation Act the workman is obliged by statute to submit himself to examination by a "medical practitioner provided and paid by the employer," and therefore employers and insurance offices usually decline to pay a consultation fee. As a rule, medical men do not care to attend a consultation without a fee, and while they

therefore consent to the examiner examining alone, they resent greatly a patient of theirs being examined without the courtesy of a notification that an examination is desired. In the case of the National Insurance Act there is no statutory obligation on an insured person to submit to examination by a medical referee, and panel doctors will no doubt bitterly object to their patients being visited and examined surreptitiously, when their own treatment or certificate is also to be reported on by the medical referee. After this explanation I feel sure that the medical profession will agree with the statement made by me in the letter which appeared in your issue of Oct. 11th, for if the profession is to be united and to retain its self-respect it must be governed by ethical rules designed not for one class, but for the members of the profession as a whole.

With regard to the proposal alluded to in my letter of Oct. 11th—namely, that one body of medical referees might be appointed jointly by the Home Secretary and the Insurance Commissioners for the purposes of both the Workmen's Compensation Act and the National Insurance Act—there are many points worthy of consideration, among which are the following:—

To many leading medical men the plan has attractions, as the status of the medical referee would be enhanced, and thus better men would be available—men whose decisions would be accepted on all sides, even if "final and conclusive" with no right of appeal. In some quarters there is an agitation for a right of appeal from the decisions of the present medical referees under the Workmen's Compensation Act, and some of the arguments are weighty; on the other hand, if the medical referees were of the first rank in the profession and were in a position to command the confidence not only of their *confrères* but of the whole country, a "final and conclusive" decision would save an immense amount of delay, with worry and work to officials and any amount of clerical labour involving large attendant expense. An attractive scale of fees for such medical referees would entail but a fraction of the cost of any Apellate scheme.

It is in the interest of the Home Office, with a view not only to safeguarding the interests of employers and workmen but to enhancing the smooth working and success of the Workmen's Compensation Act, to obtain medical referees of the first class; but this Act is primarily concerned with the effects of personal injury sustained through accident, cases which require especially the expert knowledge of surgeons, and except in the case of industrial diseases the services of expert physicians are not required. On the other hand, while the Insurance Commissioners must be equally desirous of obtaining first-class medical referees, the Commission is primarily concerned with claimants alleging disease who must be examined by expert physicians if their reports are to be accepted as authoritative. There will, however, be many claims for incapacity arising from accidents occurring outside the course of employment, and therefore outside the scope of the Workmen's Compensation Act.

Now the question will naturally arise: if one body of medical referees is to be appointed under both the Acts, how can they be obtained and selected so that the profession and the public shall have confidence in them, and also how can vacancies in their ranks be filled up and a general supervision be exercised over them so that reference to a medical referee shall be followed by a prompt examination and award? Many of the present medical referees would be willing and able to accept the extended duties and responsibilities which would devolve on the new medical referees; others might probably not feel equal to the extended responsibility. In any case, a very much larger number of medical referees would be required under a conjoint scheme than there are at present. I would suggest, therefore, the formation of a small medical board of men having an intimate knowledge of the profession and its various grades. The duty of this board would be to select physicians and surgeons (preferably from local hospital staffs having the confidence of the profession in their neighbourhood), their names to be submitted to the Home Secretary and to the Insurance Commissioners, so that if approved they might be appointed as medical referees under both Acts, with full powers as to being able to give "final and conclusive" decisions, medical cases being sent for reference to physicians and surgical cases to surgeons. Under the Workmen's Compensation Act the present procedure would continue, the medical referees being notified to examine by the county court registrars as at present, the reports returned to be placed before the county court judge. Under the National Insurance Act new machinery would have to be devised if it were found impossible to use the present county court procedure. No doubt a very large expense would be saved if on application by a Local Insurance Committee, Approved Society, or panel doctor a registrar could use the present printed forms of reference to a medical referee, his report to be returned to the court and an award made by the judge. This would have much greater weight and save a great deal of trouble to the Commission.

The medical board advising both the Home Office and the Insurance Commission might receive in the first instance all complaints relating to medical matters from panel doctors, Local Committees, Approved Societies, Insurance Offices, employers, and workmen. The board might also consider all medical questions which arose, and, in fact, constitute an intelligence bureau available on all medical matters to both the Home Office and the Insurance Commission.

The working of the Workmen's Compensation Act and the National Insurance Act must be of the greatest moment to every member of the profession, and I urge medical men to consider the above points and to use their influence so that an efficient service of medical referees may be secured in the interests of the whole community.

I am, Sir, yours faithfully,

South Hampstead, N.W., Oct. 20th, 1913. ALBERT BENTHALL.

NATIONAL INSURANCE ACT: THE DIFFICULTY OF CERTIFICATES.

To the Editor of THE LANCET.

SIR,—I am glad to see that attention has been drawn by Dr. W. W. Hardwicke to the revised form of medical certificate as suggested by the Commissioners. The wording is very objectionable, and I unhesitatingly say that it will be impossible to carry on country practice unless we are allowed, occasionally at least, to delete the words: "I have to-day examined you." The only alternative would be to sign a false certificate. I have had occasion to-day to erase these words in order to enable a man of about 65 with chronic heart trouble to receive his weekly payment. The present form of certificate used by the Prudential Company is infinitely preferable to that suggested by the Commissioners. It reads: "I certify that the above-named member is still incapable of work owing to ——." So also is that used by the Rational Society: "I hereby certify that —— is in my opinion still incapable of work." We ought to insist upon the universal adoption of a similar certificate. I view with the greatest alarm the daily increase of red tape and officialism coupled with the continued somnolence of the panel doctor.—I am, Sir, yours faithfully,

T. CUMING ASKIN, M.D. Dub.

Alderton, Woodbridge, Suffolk, Oct. 20th, 1913.

THE CASE OF MR. H. T. HAMILTON.

To the Editor of THE LANCET.

SIR,—The committee of the fund to which I referred in my letter of Oct. 4th has now received the following donations:—

	£	s.	d.
F. M. G.	10	0	0
Mr. H. Somerville	0	5	0
Mr. J. W. Heekes	1	1	0
Mr. Peter Daniel	5	0	0
Mr. C. N. Poole	1	0	0
Mrs. Moran	5	5	0
Mrs. McIntosh	5	0	0
Mr. C. Capper...	2	0	0
Dr. Cecil Johnson... ...	2	2	0
Dr. D. C. Dobell	2	2	0
Dr. W. H. Gimblett ...	2	2	0

The committee would be pleased to receive further contributions. The honorary treasurer of the fund is Mr. H. Moran, Mill Hill House, Barnes.

I am, Sir, yours faithfully,

W. H. GIMBLETT, M.D. Durh.

86, Sutherland-avenue, Maida Vale, W., Oct. 21st, 1913.

THE EXAMINATION IN ANATOMY FOR THE FELLOWSHIP OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—I think that all who take a real interest in the welfare of the teaching of anatomy and the maintenance of a right standard of knowledge of that subject will view with regret the action of the Council of the Royal College of Surgeons of England in selecting only one of the four examiners in anatomy for the Fellowship from the ranks of the professed anatomists.

The Fellowship examination provides the one great incentive that exists in this country to induce our graduates seriously to continue the study of anatomy beyond a mere qualification standard; but if the teachers of the subject in England are to have no voice in the examination it is quite certain that such a policy will exercise a disastrous influence and react upon the methods of teaching.

At the present time strenuous efforts are being made in several schools to reform the methods and scope of instruction in anatomy, by cutting out masses of useless detail, by bringing the exposition of the significance of structure into closer relationship with considerations of function and clinical experience, and by making it a live subject rather than a mere study of dead bodies. Unless those who are actually engaged in these reforms have the only possible means of enforcing them their efforts are likely to be nugatory. It is especially discouraging that the Royal College of Surgeons should be the body to hinder such efforts. For the College is the custodian of the greatest anatomical museum in existence; and since Professor Keith became their conservator the treasures of this great collection have been elucidated in a series of brilliant and suggestive lectures and demonstrations, which have emphasised the clinical importance and value of scientific anatomy.

It has always been a matter of surprise to me that so few of the London students avail themselves of this great opportunity of acquiring useful and stimulating knowledge. I think one of the chief reasons is to be found in the nature of the College's own Fellowship examination in anatomy, which should encourage the scientific study of the human body and stimulate candidates to explore the treasures of its great collection. Instead of that, by appointing as examiners surgeons whose energies are necessarily devoted to work other than mere anatomy, the College is driving students to the crammer and the text-book monger, and paralysing the work of those teachers who are endeavouring to instruct their advanced students in a knowledge of the whole structure of the human body and its real significance.

I am, Sir, yours faithfully,

G. ELLIOT SMITH.

The University of Manchester, Oct. 21st, 1913.

THE DANGERS OF THE STREET.

To the Editor of THE LANCET.

SIR,—On a recent evening a taxicab proceeding along Piccadilly, owing to an effort made by its driver to avoid another vehicle which he found suddenly in his way, mounted the pavement and ran into the railings outside a shop. As a result the four occupants of the cab were sufficiently injured to be taken to St. George's Hospital, one of them having a leg broken, two passers-by were scalded and one of them knocked down as well. The last mentioned were women, and they and a boy, who managed, however, to jump clear, were nearly crushed against the railings. This accident is more or less a repetition of others of a similar character which have had fatal results. In at least two of these the vehicle which ran on to the pavement was an omnibus, and I do not recollect that in any such case any charge of negligence has been brought home to the driver. They have been to all intents and purposes unavoidable accidents, such as may happen at any time, and such as, in fact, do happen with tolerable frequency, but not always, of course, with fatal or serious results to the innocent foot passenger. The foot passenger, however, has a right to complain of any danger to which he is forced to submit by circumstances not altogether unavoidable. As matters stand, the danger of being crushed to death on the pavement is an appreciable one, and it must almost necessarily continue in an increased degree as motor-driven traffic becomes more and more universal, so that foot passengers may some day demand that special measures should be taken for their protection. They may fairly argue that if they cross a road, although they have a perfect right to do so in reasonable safety, they must be taken to accept a certain degree of risk, and that they have themselves to thank to some extent if they meet with an accident. On the pavement, however, they are on their own ground, and have a right to protest against being exposed to dangers that no possible prudence or foresight can predict or avert. The only remedy I can suggest is the gradual raising of pavements wherever it is practicable, or fencing them with raised kerbs. On the east side of the Edgware-road a little north of the Marble Arch, in the Brompton-road, and Kensington High-street perfectly safe pavements may be seen, being no doubt survivals of footwalks raised to keep those using them above the mud through which vehicles and horsemen had to plough their way. Perhaps some day they will be taken as examples to be imitated.

I am, Sir, yours faithfully,

London, W., Oct. 18th, 1913. E. A. A.

THE NATIONAL INSURANCE ACT.

THE FORFARSHIRE INSURANCE COMMITTEE AND NIGHT VISITS.

AT a recent meeting of the Forfarshire Insurance Committee draft rules for the administration of medical benefit were submitted by the medical benefit subcommittee, and a motion for their adoption was carried, but not before discussion had taken place upon a point closely affecting medical practitioners. Mr. H. Proctor considered that the rules were "unfair to the patients and too much in favour of the doctors," particularly with regard to restrictions as to the hours at which the latter might be summoned. It was pointed out thereupon that the rule apparently objected to was one which only stated that the insured person "shall not summon the practitioner to visit him between the hours of 8 P.M. and 8 A.M. except in cases of serious emergency." This did not satisfy the objector, who was of the opinion that it was left to the medical man to say whether a case was serious or not. He contended that if a medical practitioner was summoned by a patient who considered his condition serious he should go, and if he had any complaint to make against the patient for summoning him unnecessarily he should make it to the committee. The chairman expressed the opinion that the rules covered everything, and that if there were anything defective in them they could be amended later. A further discussion was then raised as to the steps to be taken by a patient complaining against his medical attendant, and attention was called to the rules dealing with the matter in the set of draft rules proposed before the committee. These were then adopted as stated. It is obviously necessary that such a rule as that above referred to should be imposed, as in its absence patients would have a right to assume that they were entitled to summon a medical man at any time of the day or night. Reference to the Administration of Medical Benefit Regulations, 1912, will show that it is fully intended by the Insurance Commissioners that night visits should be on a different footing from day visits, and the hours 8 P.M. to 8 A.M. are adopted by them to define a night visit.

CONTRACT PRACTICE IN MID-DERBYSHIRE.

Notice has been given by medical men in mid-Derbyshire under contracts with Friendly Societies and colliery field clubs to terminate their engagements so far as these affect their attendance upon wives and families of insured persons.

THE NEW DRUG TARIFF.

The Pharmaceutical Standing Committee on Insurance has submitted to Local Pharmaceutical Committees copies of a revised tariff for drugs and appliances which it is proposed shall form the basis of the new contracts between the panel chemists and Local Insurance Committees. This proposed

new tariff is now being discussed locally by the chemists, and if it is agreed upon will be submitted to the Insurance Committees. The principle upon which the tariff is based is not altered and is the same as that adopted in Germany—namely, a charge is made for each ingredient of a medicine according to its quantity and value plus a dispensing fee. A number of alterations in prices has been necessitated by fluctuations in the primary markets for drugs and chemicals, and prices for various quantities have in the new tariff been carried out in greater detail. Many additions have been made to the list of drugs and preparations, and these will facilitate the work entailed in making out the accounts.

Medical News.

UNIVERSITY OF GLASGOW: THIRD AND FOURTH EXAMINATIONS.—The following have passed in the subjects indicated (P., Pathology; M., Medical Jurisprudence and Public Health) the Third Professional Examination (Old and New Ordinance) and Fourth Professional Examination (New Ordinance) for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.):—

George Kirkwood Allan (M.), James Mair Anderson (M.), John Anderson (P.), Andrew Duffield Blakely (M.), William Ernest Boyd, M.A. (M.), John Buchanan (M.), William Edmund Alexander Buchanan (M.), John Cameron (P., M.), James Campbell (P., M.), John Munro Campbell (P.), Alfred Mackenzie Clark (P.), Allan La Barte Clark (P., M.), Robert Clark, M.A. (M.), William Cullen (P.), Fritz Vivian Daeblitz (P.), Thomas Ferguson (P.), Harry Taylor Findlay (P.), George John Fraser (P., M.), Ian Maclean Frazer (P., M.), Walter Weir Galbraith (M.), Thomas Gilchrist, M.A. (M.), George Gordon (M.), Ronald Thomson Grant (P.), Robert Milne Lang (P.), William Joseph Brown Lavery (P.), Hugh Douglas M'Crossan (P.), Archibald Munn M'Cutcheon (P., M.), Duncan Fraser Macdonald (P.), John Bowes M'Dougall (P., M.), Donald M'Donald M'Intyre (M.), Malcolm Bonar Macleod (P.), Frederick William M'Millian (P., M.), James Kennedy Manson (M.), James M'Donald Matheson (M.), John Park Mathie (M.), Thomas Spence Meighan (M.), Prem Nath (M.), John M'Lean Pinkerton, B.Sc. (M.), John Stuart Prentice (P., M.), William Burns Primrose (P.), Hugh Quigley (M.), Thomas Forbes Brown Reid (M.), George William Ronaldson (M.), Alexander Forbes Ross (M.), Archibald M'Kerrow Russell (M.), Seymour Cochrane Shanks (P.), John Sillars (M.), John Smith, M.A. (M.), Norman M'Gaan Smith (M.), John Banks Steven (M.), John Fraser Steven, M.A. (P.), Robert Sutherland Strachan (P.), Cecil Raymond Tytler Thompson (P., M.), William Thomson, M.A. (M.), James Walker (P., M.), James Gordon Wilson (P., M.), and Alexander Young (M.).

Women.—Agnes Elizabeth Mary Cooke (M.), Dagmar Florence Curjel (M.), Ethel Winifred Gompertz (M.), Margaret Walker (P.), Marguerite Wilson (M.), and Isabella Henrietta Younger (P.).

The following have satisfied the Examiners in the fourth (final) professional examination for the degrees of M.B. and Ch.B.:—

Douglas Kinchin Adams, M.A., B.Sc., Nora Maud Aden Allan, Emile Augustine Cameron Beard, Simon Harry Bloom, William Adam Brechin, David Peebles Brown, Margaret Jarvey Brown, Benjamin Cohen, Wallace MacCallum Conley, M.A., Nathaniel Crichlow, Lawrence Crombie, Daniel Augustine Cush, Gabriel Daniel de Kock, Joseph Dunbar, William Campbell Fleischmann, William Forsyth, William Fotheringham, Ian Dingwall Grant, John Galloway Hendry, William John Henry, George Hislop, Mary Pringle Hislop, William Hornsby, Alexander Lindsay, Douglas M'Alpine, James Learmont M'Bean, John Aloysius M'Connochie, L.A.H. Dub., James Walter M'Donald, John MacInnes, Annie Rankine M'Kail, Donald Mackinnon, James Robertson Cowper Mackintosh, Robert M'Lean, Andrew Paton Martin, Osborne Henry Mavor, Archibald Underwood Millar, M.A., Michael Murphy, Archibald Naismith, Thomas Murray Newton, James Purdie, Angus M'Innes Ramsay, David Smith, William Robertson Snodgrass, M.A., B.Sc., William Rowland Taylor, Carel Johannes van Lingen, Robert Bruce Wallace, and Matthew White, M.A.

At the recent professional examinations for the degrees of M.B., Ch.B., the following candidates passed with distinction in the subjects indicated:—

First Examination.—In Botany and in Physics—Robert Aitken and James Rögnvald Learmouth. In Botany—William Adams, Robert Stevenson Caldwell, James Biggam, Douglas Galbraith, Andrew Brown Macaulay Lang, M.A., John Marshall, and John Stirling Young. In Physics—William John Ferguson, Grace Leisk Hunter, Albert Ernest Lillicrap, James Robertson, and Jack Myles. In Chemistry—William M'William and Norman Bligh Peacock.

Second Examination.—In Anatomy and in Physiology—John Dunbar. In Anatomy—Helen Young Murdoch. In Physiology—Stuart Ernest Armstrong Buckley, Maud Christine Cairney, David Campbell, M.A., B.Sc., David Clyde, Arthur Kennedy, M.A., James MacAlister Mackintosh, M.A., Alexander Fisher M'Millan, and Jane Stalker. In Materia Medica and Therapeutics—John Mandeville Macfie, John King Rennie, and Andrew Stenhouse.

Third Examination.—In Pathology—Ronald Thomson Grant and John Bowes M'Dougall. In Medical Jurisprudence and Public Health—Archibald Munn M'Cutcheon.

Fourth Examination.—In Surgery and Clinical Surgery, in Practice of Medicine and Clinical Medicine, and in Midwifery—Douglas Kinchin Adams, M.A., B.Sc. In Practice of Medicine and Clinical Medicine and in Midwifery—Douglas M'Alpine. In Surgery—Carel Johannes van Lingen and Matthew White, M.A. In Midwifery—Wallace MacCallum Conley, M.A., William John Henry, George Hislop, William Hornsby, John MacInnes, and Robert M'Lean.

FOREIGN UNIVERSITY INTELLIGENCE.—*Basle:* Dr. Eugen Ludwig, of Leipsic Anatomical Institute, has been appointed Prosector in the University Normal Anatomical Institute.—*Berlin:* Dr. Loeffler, professor of Hygiene in the University of Greifswald, has been appointed Director of the Institute of Infectious Diseases, in succession to Dr. Gaffky, who is leaving Berlin with the intention of living in retirement in Hanover, his birthplace. Dr. Kurt Strauch, *privat-docent* of Forensic Medicine, and Dr. Hermann Beyer, *privat-docent* of Otology and Laryngology, have been granted the title of Professor.—*Bologna:* Dr. Guido Vernoni has been recognised as *privat-docent* of General Pathology.—*Bonn:* Dr. Brink has been appointed Chief Surgeon to the Brothers of Charity Hospital, in succession to the late Dr. Rieder Pasha.—*Breslau:* Dr. Oskar Bondy and Dr. Fritz Heimann have been recognised as *privat-docenten* of Midwifery and Gynæcology.—*Cagliari:* Dr. Antonio Murgia has been recognised as *privat-docent* of Forensic Medicine.—*Chicago (University of Illinois):* Dr. Edgar D. Coolidge has been appointed Professor of Materia Medica, in succession to Dr. G. F. Butler, resigned.—*Gratz:* Dr. Hans Rable, professor in Innsbruck, has been appointed to the chair of Histology and Embryology. Dr. Fritz Pregel, of Innsbruck, has been offered the chair of Medical Chemistry.—*Königsberg:* Dr. Martin Kirschner, *privat-docent*, has been appointed Oberarzt of the University Surgical Clinic, in succession to Dr. Rudolf Haecker (who is going to Essen), and granted the title of Professor.—*Prague (German University):* Dr. Joseph Rambousek, a well-known authority on trade hygiene, has been granted the title of Extraordinary Professor. Dr. O. Adler has been recognised as *privat-docent* of Medicine.—*Prague (Bohemian University):* Dr. Ottoka Kutvirt, *privat-docent*, has been appointed Extraordinary Professor of Otology, Rhinology, and Laryngology. Dr. Karl Vymola, *privat-docent* of oto-laryngology, and Dr. Josef Znajemsky, *privat-docent* of surgery, have been granted the title of Extraordinary Professor.—*San Francisco (Leland Stanford University):* Dr. Leonard W. Ely, of Denver, has been appointed Adjunct Professor of Orthopædic Surgery.—*Vienna:* Dr. Robert Bárány, *privat-docent* of Otology, has been awarded the Erb medal of the German Neurological Society for his researches on the physiology and pathology of the sense of hearing.—*Würzburg:* Dr. L. Burkhardt, extraordinary professor of surgery and surgeon to the Nürnberg Hospital, is retiring.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—A quarterly court of the directors of the above society was held on Oct. 8th, Sir Thomas Boor Crosby, the President, being in the chair. Twenty members of the court were present. Three new members were elected to the society. The sum of £523 was voted to be distributed among the widows and orphans at Christmas, each widow to receive £10, each orphan £3, and each orphan on the Copeland Fund £10. It was resolved that the income from the Brickwell legacy be utilised as follows:—

1. That the legacy received from the late Mr. James Brickwell be known as the Brickwell Fund, and any grant made from it be marked as coming from that fund.
2. That the grants to widows over the age of 65 may be increased by £25 per annum.
2a. That the grants to widows under the age of 65 may be increased by £10 per annum.
3. That the grants under the Copeland Fund may be increased from the Brickwell Fund by £20 per annum.
4. That an increased grant of £15 per annum may be made to the orphans other than those in receipt of grants under the Copeland Fund.
5. That the residue of income be kept on deposit and utilised as directed by the court of directors.

The total amount of the Brickwell legacy is £37,250, yielding an annual income of £1325 10*s.* The invested funds of the society now stand at £139,500. Relief is only granted to the widows and orphans of deceased members. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20 mile radius of Charing Cross. The annual subscription is 2 guineas. Special terms for life membership. Further particulars and

application forms for membership may be obtained from the secretary at the offices of the society, 11, Chandos-street, Cavendish-square, W.

Dr. A. K. Chalmers, medical officer of health of Glasgow, has been elected President of the Society of Medical Officers of Health for the ensuing year.

BORIC ACID IN SAUSAGES.—At Devonport recently a local tradesman was fined £2 and costs for selling sausages containing 112 grains of boric acid to the pound.

ROYAL SANITARY INSTITUTE.—The Right Hon. Earl Derby, G.C.V.O., has accepted the office of President of the twenty-ninth congress of the Royal Sanitary Institute, to be held at Blackpool from July 6th to 11th, 1914.

DONATIONS AND BEQUESTS.—By the will of Colonel John Hill, R.E., of Royal-crescent, Brighton, the Middlesex Hospital will receive £22,000.—University College Hospital, London, has received 100 guineas from an anonymous donor.

Sir M. M. Bhownaggree has presented to the London School of Tropical Medicine a medal, to be competed for annually, in memory of the late Dr. Cawas Lalcaca, who was shot on July 1st, 1909, by the murderer of Sir Curzon Wyllie.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—An address will be delivered in the college by Sir Gilbert Parker, LL.D., M.P., on Thursday, Oct. 30th, at 5 P.M. Sir Alfred Pearce Gould, K.C.V.O., dean of the Medical Faculty, University of London, will take the chair. The public are invited to attend.

CENTENARIANS.—The death occurred at Bridgwater on Oct. 13th of James Creedy, who celebrated his 100th birthday in March, 1911. He retained his faculties until near his death, and remembered the rejoicing in the town following the battle of Waterloo.—Susannah Harris, who died lately at Shipley, a village near Wolverhampton, at the age of 101 years, was born at Inkberrow, Worcestershire, on July 12th, 1812.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE AND COMPANY, LIMITED, 44 and 45, Rathbone-place, London, W.

The Ego and its Place in the World. By Charles Gray Shaw, Author of "Christianity and Modern Culture," &c. Price 12s. 6d. net.

A. MARCUS UND E. WEBER'S VERLAG, Thomastrasse, 1, Bonn.

1870/71. Erinnerungen und Betrachtungen. Von Professor Dr. Heinrich Fritsch, Geh. Ober-Medizinalrat. 3-5 Auflage. Price, bound, M.5.

BOERICKE AND TAFEL, 1011, Arch-street, Philadelphia, Pa., U.S.A.

Diseases of the Skin, including the Exanthemata. For the Use of General Practitioners and Advanced Students. By Frederick M. Dearborn, A.B., M.D., Professor of Dermatology in the New York Homeopathic Medical College and Flower Hospital. Price, cloth, $5.00 net.

BRADLEY AND SON, LIMITED, Reading.

Statistical Ready Reckoner. By Gerard C. Taylor, M.A., M.D. Cantab., D.P.H., County Medical Officer of Health of Berkshire. Price 12s. 6d. net.

CASSELL AND COMPANY, LIMITED, London, New York, Toronto, and Melbourne.

The British Red Cross in the Balkans. A Series of 106 Reproductions of Photographs taken by Members of the British Red Cross Society's Units. Price 1s. net.

COLUMBIA UNIVERSITY PRESS, New York, U.S.A.

Studies in Cancer and Allied Subjects. The Study of Experimental Cancer. A Review. By William H. Woglom, M.D., Assistant Professor, Columbia University. Assigned to Cancer Research, Sometime Assistant to the Director of the Laboratories of the Imperial Cancer Research Fund, London. Conducted under the George Crocker Special Research Fund at Columbia University. Volume I. Price $5.00 net. Volume III. From the Departments of Zoology, Surgery, Clinical Pathology, and Biological Chemistry. Price $5.00 net.

DULAU AND CO., LIMITED, 37, Soho-square, London, W.

Mendelism and the Problem of Mental Defect. I. A Criticism of Recent American Work. By David Heron, D.Sc., Galton Laboratory, University of London. (Department of Applied Statistics, University College, London. Questions of the Day and of the Fray, No. VII.) Price 2s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, Edinburgh, Glasgow, and London.

A Companion to Manuals of Practical Anatomy. By E. B. Jamieson, M.D., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. Price 6s. net.

GURNEY AND JACKSON, 33, Paternoster-row, London. OLIVER AND BOYD, Tweeddale-court, Edinburgh.

The Sugars and their Simple Derivatives. By John E. Mackenzie, D.Sc., Ph.D., Lecturer on Chemistry, University of Edinburgh. Price 7s. 6d. net.

HARVARD MEDICAL SCHOOL, Boston, Mass., U.S.A.

Department of Neurology, Harvard Medical School. Vol. V. 1912. Price not stated.

LAURIE, T. WERNER, LIMITED, Clifford's Inn, London.

Camp Fire Yarns of the Lost Legion. By Colonel G. Hamilton-Browne, "Maori Browne," late Commandant in Colonial Forces. Price 12s. 6d. net.

Love and £200 a Year. By Mrs. Alfred Praga. Price 2s. net.

Goethe's Hermann and Dorothea. Done into English by Vivian Brandon. Price 3s. 6d. net.

LEWIS, H. K., London.

Proceedings of the Prehistoric Society of East Anglia for 1912-13. Vol. I., Part III. (Edited by W. G. Clarke, Hon. Secretary.) Price 3s. 6d. net. (postage 3d.)

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H. Univ., of London, and Henry R. Kenwood, M.B., F.R.S. Edin., D.P.H. Lond. Fifth edition. Price 12s. 6d. net.

Practical Bacteriology, Blood Work, and Animal Parasitology, including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes. By E. R. Stitt, A.B., Ph.G., M.D., Medical Inspector, U.S. Navy. Third edition, revised and enlarged. Price 6s. 6d. net.

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.

Lippincott's New Medical Dictionary. A Vocabulary of the Terms used in Medicine, Dentistry, Veterinary Medicine, and the Allied Sciences, with their Pronunciation, Etymology, and Signification. By Henry W. Cattell, A.M. (Laf.), M.D. (U. of P.), Editor of International Clinics, Fellow of the College of Physicians of Philadelphia. Third edition. Price 21s. net.

Blood Pressure in General Practice. By Percival Nicholson, M.D. Price 6s. net.

Normal Histology. With Special Reference to the Structure of the Human Body. By George A. Piersol, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania. Tenth edition. Price 15s. net.

METHUEN AND CO., LIMITED, 36, Essex-street, Strand, London, W.C.

Lip-Reading: Principles and Practice. A Handbook for Teachers and for Self Instruction. By Edward B. Nitchie, B.A., Principal of the New York School for the Hard-of-Hearing. Price 5s. net.

MURRAY AND EVENDEN, LIMITED, Pleydell House, Pleydell-street, Fleet-street, London, E.C.

Born in Blinkers. A Romance of Edinburgh University. By M. Oston, M.D. Price not stated.

NATIONAL UNIVERSITY OF IRELAND, 49, Merrion-square, Dublin. LONGMANS, GREEN, AND CO., 39, Paternoster-row, London. (Printed for the National University by Alex. Thom and Co., Limited, Dublin.)

The National University of Ireland. Calendar for the Year 1913. Price not stated.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

FARNFIELD, W. W., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Gillingham District of the county of Dorset.

FRASER, Sir THOMAS, M.D. Edin., F.R.C.P. Edin., has been appointed Chairman of the Medical Lecturers in the Royal Infirmary, Edinburgh.

GARRETT, P. C., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Dursley District of the county of Gloucester.

LYLE, JAMES DUNCAN, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Anæsthetist to the London Hospital.

MACEWEN, WILLIAM, M.B., M.Ch. Glasg., has been appointed School Medical Officer to the Fife and Kinross Education Committee.

MACKIE, WILLIAM, M.D., M.S. Aberd., has been appointed a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Inverness, Elgin, and Nairn.

MAYNE, W. J. F., M.B., M.Ch. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Banbridge District of the county of Down.

NELSON, H. RUNDLE, B.S., M.D. Dub., has been appointed Quarantine Officer at William Head, Vancouver Island.

NICHOLLS, JOHN MICHAEL, L.R.C.P. Lond., M.R.C.S., has been appointed Chairman of the Cornwall Midwives Committee.

NOALL, WILLIAM PAYNTER, M.S., M.B. Lond., F.R.C.S. Eng., has been appointed Surgeon (with charge of Out-patients) to the York County Hospital.

PALMER, S., M.D. Durb., has been appointed Police Surgeon to the South District of Liverpool.

RUSSELL, WILLIAM, M.D. Edin., F.R.C.P. Edin., has been appointed to the new Moncrieff Arnott Chair of Clinical Medicine in the University of Edinburgh.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ARGYLE AND BUTE ASYLUM, Lochgilphead.—Assistant Medical Officer, unmarried. Salary £175 per annum, with apartments, board, and laundry.

BIRMINGHAM CITY FEVER HOSPITAL, Little Bromwich.—Assistant Medical Officer. Salary £150 per annum, with board and residence.

BIRMINGHAM MATERNITY HOSPITAL.—Honorary Obstetric Registrar.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Two House Surgeons for six months. Salary £75 per annum, with board, residence, and laundry. Also Pathologist. Salary £50 per annum.

BRADFORD CHILDREN'S HOSPITAL.—Female House Surgeon. Salary £80 per annum.

BRADFORD UNION, EASTBY SANATORIUM.—Assistant Resident Medical Officer, unmarried. Salary £130 per annum, with rations, apartments, and laundry.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—Assistant Pathologist. Salary £100 per annum, with board, residence, and laundry.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-resident House Surgeon for six months. Salary at rate of £100 per annum.

BRISTOL ROYAL INFIRMARY.—House Surgeon for six months for Throat, Nose, and Ear. Salary £75 per annum, with board, apartments, and laundry.

BROMSGROVE, WORCESTERSHIRE COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £225 per annum, with quarters, board, washing, and attendance.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and laundry.

CARDIFF, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION.—Tuberculosis Physicians. Salary £450 per annum.

CARMARTHEN, JOINT COUNTIES ASYLUM.—Second Assistant Medical Officer. Salary £180 per annum, with board, lodging, washing, &c.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.—Resident House Surgeon. Salary £50 per annum, with board and residence. Also Registrars.

CHELTENHAM GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, lodging, and washing.

CITY OF WESTMINSTER UNION INFIRMARY, Colindale-avenue, Hendon, N.W.—Assistant Medical Officer. Salary £160 per annum, with board, residence, and washing.

COLOMBO, Ceylon.—Assistant Medical Officer of Health. Salary £333 per annum.

DURHAM COUNTY ASYLUM, Winterton, Ferryhill.—Third and Fourth Assistant Medical Officers, unmarried. Salary £200 per annum, with board, lodging, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Assistant Surgeon to Out-patients.

EAST SUSSEX COUNTY COUNCIL EDUCATION COMMITTEE.—Junior Assistant School Medical Officer. Salary £250 per annum.

ENNISKILLEN, FERMANAGH COUNTY HOSPITAL.—House Surgeon. Salary £104 per annum.

ESSEX EDUCATION COMMITTEE.—School Medical Inspector. Salary £250 per annum.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing. Also Physician in Charge of Skin Department.

GATESHEAD ASYLUM, Stannington, Northumberland.—Assistant Medical Officer, unmarried. Salary £180 per annum, with rooms, board, and laundry.

GLASGOW UNIVERSITY.—Additional Examinerships.

GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—First and Second Assistant Medical Officers. Salaries, with rooms, board, attendance, and laundry.

HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

HEMEL HEMPSTEAD, WEST HERTS HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with rooms, board, and washing.

HOLBORN UNION INFIRMARY, Upper Holloway, N.—Second Assistant Medical Officer. Salary £110 per annum, with board, apartments, and washing.

HULL ROYAL INFIRMARY.—Casualty House Surgeon for six months. Salary at rate of £80 per annum, with board and lodging.

KENSINGTON DISPENSARY AND CHILDREN'S HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, apartments, laundry, &c.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry.

LEYTON, WALTHAMSTOW, AND WANSTEAD CHILDREN'S AND GENERAL HOSPITAL.—Resident House Surgeon. Salary at rate of £100 per annum, with rooms, board, and washing.

LIVERPOOL, PARKHILL HOSPITAL AND SANATORIUM FOR TUBERCULOSIS.—Assistant Resident Medical Officer, unmarried. Salary £140 per annum, with board, washing, and lodging.

LONDON COUNTY ASYLUM, Hanwell, W.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and washing.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Three Registrars.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon and Junior House Surgeon. Salary £100 and £80 per annum respectively, with board and residence.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £200 per annum, with quarters, attendance, coals, washing, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Junior House Surgeon. Salary £100 per annum, with apartments and board.

NEWCASTLE-UPON-TYNE, UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Lecturer in Surgery.

NORTHAMPTON COUNTY ASYLUM, Berry Wood, Northamptom.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, residence, and laundry.

OXFORD COUNTY ASYLUM, Littlemore, near Oxford.—Assistant Medical Officer. Salary £150 per annum, with apartments, board, and washing.

PADDINGTON INFIRMARY.—Second Assistant to Infirmary and Medical Officer of Workhouse. Salary at rate of £100 per annum, with board, lodging, and washing.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months. Salary £75 per annum, with board, residence, and washing. Also House Surgeon. Salary £100 per annum, with board, residence, and washing.

PORTSMOUTH ROYAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Assistant Gynæcologist.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for Out-patient Department for four months. Salary at rate of £60 per annum, with board, residence, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Surgical Registrar.

RICHMOND, SURREY, ROYAL HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board, apartments, and washing.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Assistant Physician. Also House Surgeon for six months. Board, lodging, and washing provided.

ST. GILES, CAMBERWELL, INFIRMARY, Brunswick-square, Camberwell.—Junior Assistant Medical Officer. Salary £120 per annum, with apartments, board, and washing.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Junior Resident Medical Officer for seven months. Salary at rate of £70 per annum, with residence, board, and laundry.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, &c.

SHEFFIELD ROYAL INFIRMARY.—Surgical Registrar. Salary £100 per annum.

SOUTH LONDON HOSPITAL FOR WOMEN.—Three Clinical Assistants.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—Demonstrator in the Department of Bacteriology. Salary £150 per annum.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Surgeon to In-patients and Surgeon to Out-patients.

VIRGINIA WATER, SURREY, HOLLOWAY SANATORIUM HOSPITAL FOR THE INSANE.—Junior Assistant Medical Officer. Salary £250 per annum, with board, lodging, laundry, and attendance.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, attendance, and washing.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant Resident House Surgeon and Anæsthetist, unmarried. Salary £75 per annum, with board, residence, and washing.

WESTERN OPHTHALMIC HOSPITAL, Marylebone-road, W.—House Surgeon. Salary £100 per annum.

WEST LONDON HOSPITAL, W.—Assistant Dental Surgeon. Also Second X Ray Officer.

WHITECHAPEL UNION INFIRMARY, Vallance-road, E.—Second Assistant Resident Medical Officer. Salary £120 per annum, with rations, apartments, and washing.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Acts at Stoney Stanton, in the county of Leicester.

Births, Marriages, and Deaths.

MARRIAGES.

ADAMS—WEBB.—On Oct. 14th, at St. Nicholas' Church, Chislehurst, by the Rev. J. E. Dawson, rector of Chislehurst, assisted by the Rev. C. F. Kite, vicar of North Petherwyn, and the Rev. F. W. Ainley, vicar of St. Andrew's, Barnsbury, Joseph E. Adams, M.S., F.R.C.S., of 40, Devonshire-place, W., to Muriel, youngest daughter of the late Harry Webb and Mrs. Webb, of Southlaund, Chislehurst.

EDWARDS—STANTON.—On Oct. 15th, at Christ Church, Cheltenham, Hugh Anderson Edwards, M.B., Ch.B., Wallsend-on-Tyne, to Ilma Irene Stanton, youngest daughter of the late Alfred Alexander Stanton, of Johannesburg.

HOLLAND—COLGATE.—On Oct. 17th, at the Parish Church, Eastbourne, by the Rev. Wm. C. Streatfeild, Eardley Lancelot, eldest son of W. Lancelot Holland, M.A., of Worthing, to Dorothy Marian, elder daughter of Dr. Henry Colgate and Mrs. Colgate, of the Seven Gables, Eastbourne.

PAINTON—EVEN.—On Oct. 15th, at the Church of St. Mary-at-the Walls, Colchester, Captain George R. Painton, R.A.M.C., to Aileen Mona, daughter of Colonel G. E. Even, C.B. (Indian Army), and Mrs. Even, of Inglis-road, Colchester.

DEATHS.

ADAM.—On Oct. 19th, at Dingwall, Ross-shire, Scotland, suddenly, John Adam, M.D.

ANGUS.—On Oct. 18th, at Thornleigh, Bentinck-road, Newcastle-on-Tyne, suddenly, James Acworth Angus, M.R.C.S., L.S.A., in his 78th year.

CARPENTER.—On Oct. 15th, at Croydon, Arthur Bristowe Carpenter, M.A., M.B. Oxon., M.R.C.S., L.R.C.P., aged 59 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE NEW NORWEGIAN PHARMACOPŒIA.

THE now published fourth edition of the Norwegian Pharmacopœia will, from Jan. 1st, 1914, take the place of the edition in force since 1895. The new work embodies many features of modern research in pharmacy and testifies to the high scientific attainments of Norwegian pharmacists. In many respects this edition resembles the German Pharmacopœia of 1910, with which it has many points in common; for instance, a list of the reagents used in the analysis of urine, blood, stomach contents, and stains for bacteriological work is, as in the latter, also included in the appendix, and a large number of the tests for purity are similar in both works.

One noticeable feature on looking through this work of 480 pages is the peculiar Latin nomenclature adopted for the titles of the articles—the text itself is throughout in Norwegian—which differs materially from the Latin forms in use in Great Britain or in other continental countries. Aqua assumes the form "aqva," potassii bromidum is rendered "brometum kalicum," and we find carbonas natricus, chloretum morphicum, liqvor arsenitis kalici, nitras argenticus, oxydum magnesicum leve. The existence of such divergent designations for one and the same substance in the classic tongue surely calls for uniformity in the nomenclature of official drugs; thus the "Latin" designations for ammonium chloride in use in various Pharmacopœias are respectively: Ammonii chloridum, ammonium chloratum, and chloretum ammonicum.

In the present edition 41 articles have been deleted and 85 substances have been added. Among the newer remedies included figure acetyl-salicylic acid, diethyl-barbituric acid, suprarenin bitartrate, creosote carbonate, hexamethylenetetramine, novocaine, silver proteinate, antipyrine salicylate. Instead of enforcing an absolute content of active principle in the galenical preparations of potent drugs, a maximum and minimum content is prescribed. Thus, extract of belladonna is required to have a content of not less than 1 or more than 1·2 per cent. of alkaloids, extract of nux vomica 15 to 17 per cent. of total alkaloids, extract of opium 18 to 20 per cent. of morphine. In the case of liquid extracts and tinctures the specific gravity as well as the percentage of residue obtained on evaporating and drying a given amount of the preparation is stated. In view of the discussions as to the relative value of freshly prepared infusions and those prepared by diluting a concentrated extract of the drug with water, it is interesting to note that the new Norwegian pharmacopœia includes concentrated infusions of condurango, ipecacuanha, senega, and valerian, prepared by percolation and standardised to represent a fixed amount of drug, and, in the absence of instructions to the contrary, directs that the prescribed amount of infusion shall be prepared from the concentrated product by diluting it with water.

An interesting requirement is prescribed in the monograph on digitalis leaves. The latter are to be dried for five hours at a temperature of 80° C., and then filled into well closed containers not holding more than 50 grammes; this requirement gains additional importance in view of recent research work on the action of the enzymes in the leaves, and their effects on the activity of the dried drug. Another innovation is found in the method now adopted of preparing bitter almond water (which on the continent is more generally employed than cherry-laurel water); the time honoured process of preparing this dilute solution of hydrocyanic acid by distillation of bitter almonds has been abandoned and a "synthetic" product substituted, prepared by mixing oil of bitter almond 4, hydrocyanic acid 50, alcohol 146, distilled water 800. Among other innovations may be noted the inclusion of the molecular weights and chemical formulas, and of the optical rotation indices of essential oils.

MEDICAL REPORT ON CYPRUS.

THE Blue-book of Cyprus for the past year includes a report by Dr. R. A. Cleveland, head of the Medical Department, in the course of which he states that the general health of the inhabitants and the sanitary conditions of the island have been satisfactory. The outbreak of small-pox in 1911 died out during 1912, only five cases occurring during the earlier months with no deaths, and the island has now been free from the disease for some time. The prevailing diseases in 1912 were malaria, diseases of the digestive and respiratory systems, eye and skin diseases. Only 24 cases of cerebro-spinal meningitis were reported during the year, and these of a mild type. Of diphtheria only three cases were recorded. The number of cases of enteric fever showed an increase, being 447, as compared with 299 reported in 1911 and 334 in 1910. The rate of mortality, however, is not high, and the disease still retains the mild type peculiar to Cyprus. There has unfortunately been a considerable increase in the number of cases of malaria treated by the Government officers of the island, as shown by the following figures: cases in 1907, 7561; 1908, 10,746; 1909, 7450; 1910, 6074; 1911, 7198; and 1912, 10,035. No serious epidemic prevailed during the year, and there was no case either of plague or cholera.

In the six district hospitals 2492 in-patients and 20,904 out-patients were treated, and at the 13 rural dispensaries 13,230 were treated. The Central Hospital at Nicosia has done valuable work, and the staff is competent and sufficient for the requirements of the institution. The maternity wards have been fairly successful, but notwithstanding their convenience and comfort, and the excellent attendance that is offered, they do not gain in popularity. At the Larnaca Government-aided hospital a ward for children has been opened, and is doing very good and useful work with a trained English nursing sister in charge of the management. Fewer cases of leprosy were admitted to the Leper Farm than in previous years. It is, perhaps, premature to express a definite opinion, but the disease seems to be decreasing in the island. So far as is known, all fresh cases are sent up as soon as the disease shows itself.

The Acting High Commissioner, in his "General Observations," remarks: "Cyprus was fortunate in obtaining at the end of the year the services of Sir Ronald Ross, K.C.B., F.R.S., to investigate malarial conditions in the island and to make recommendations as to the method of combating the disease. Spleen measurements taken at a variety of village schools showed that the disease is dangerously common in certain villages, and vigorous steps will probably have to be taken to eliminate it. Unfortunately, the Cypriote peasant is apathetic with regard to sanitation, and it is difficult to get sanitary regulations, even of the most simple kind, carried out unless a large staff of Government overseers is appointed."

The absolute mean temperature for 1912 was 65·6° F., which was nearly the same as the mean of the last ten years. The winter, though colder than that of the preceding year, was above the average, and snow only fell once on the Kyrenia hills. The lowest temperature recorded at Nicosia was 31° on Feb. 2nd and the highest 103° on Sept. 27th. Nicosia still shows a higher summer temperature than any neighbouring place, though Suez and Khartoum are both slightly higher.

THE USE OF COLOUR IN BOOKBINDINGS.

To the Editor of THE LANCET.

SIR,—I have been interested in the letter by "Bouquineur" in your issue of Oct. 4th on the use of colour in bookbindings, a differentiation that seems to meet with some measure of your support. Would it not be an easy solution of the difficulty for anyone who wishes to make such distinctions to cover his books with paper of any colour he might fancy for works on the various subjects? This would, besides, keep the bindings clean. I am, Sir, yours faithfully,

Argyll-terrace, Derby, Oct. 21st, 1913. F. J. R. CARULLA.

A VISITING WORKHOUSE SURGEON.

THE Brighton guardians at a recent meeting decided by 18 votes to 7 to appoint a consulting and operating surgeon at the workhouse for a period of one year at a payment of 100 guineas for his services. When the guardians originally suggested such an appointment the medical practitioners of the neighbourhood took such a decided objection to the salary of 50 guineas then allocated to the office that they managed to bar any applications for the appointment. The guardians, however, had gone so far as to fit up a special room and purchase the necessary instruments. The assistance of the Local Government Board was invoked, and after considerable negotiations the medical practitioners expressed themselves agreeable to the appointment at the salary of 100 guineas, and the board of guardians has now passed the necessary resolution, preferring this scheme to one for the appointment of a number of specially skilled surgeons whose services should be at the disposal of the medical officer at a prearranged scale of charges. Mr. Lowry, an inspector of the Local Government Board, who was present at the guardians' meeting when the vote was taken, said that visiting surgeons had been appointed to infirmaries in other towns for one year, and he foresaw no difficulty in obtaining the approval of the Whitehall authorities. It would, Mr. Lowry added, be a distinct advance to have a visiting surgeon a the workhouse.

REDUCED DEATH-RATES IN BAVARIA.

IN his annual report on the affairs of Bavaria Mr. A. Abbott, British Vice-Consul, writes: The mortality from tuberculosis has decreased during the last 30 years from 254 to 204 per 100,000, but the diminution has taken place exclusively during the last five years and is the result of the strong action in favour of popular sanatoriums. In the last three decades the mortality from diphtheria has sunk from 12 to 21 per 100,000, that from typhoid from 22 to 2 per 100,000, scarlet fever from 45 to 7 per 100,000, and measles 35 to 24 per 100,000. The mortality among infants in their first year is in Germany about 400,000 per annum, or 19·8 per cent. of the births. In the case of illegitimate

children, of whom nearly 180,000 are born each year, the birth-rate in the first year is 32·7 per cent. Bavaria has the highest infantile mortality of all the German States, but the figures for 1912 are more favourable, and show that only 37,013 children under one year died, as compared with 46,665 in the previous year. The rate in the cities was 15·5 per cent. of the births (in 1911 20 per cent.); in the country, 18·4 per cent. (22·9 per cent. in 1911). The high figures for 1911 are, however, due in part to the hot summer. The rate in Munich has sunk very noticeably, the figures being; 1891–95, 30·3 per cent.; 1896–1900, 28 per cent.; 1900–5, 26·6 per cent.; and 1906–10, 19 per cent. To improve conditions the Bavarian Parliament has appropriated £2500. An association for the care of infants has been started, and will found affiliated societies in the provinces. Prominent officials and physicians are to take part in the work. The hospital treatment of infants has made great advances. Twenty years ago the infant mortality in the hospitals was from 60 to 70 per cent.; at present it is lower than the general infantile death-rate, although the hospitals only receive severe cases. A sanatorium for consumptive children is being built near the Lake of Constance at a cost of £25,000.

DRUG-TAINTED MILK IN EAST PRUSSIA.

IN a recently issued police by-law regulating the sale of milk in the province of Eastern Prussia a rule has been inserted prohibiting the sale of milk from cows undergoing treatment with potent drugs liable to pass into the milk, or from cows treated with such remedies during the last three days preceding the sale of the milk. Such remedies are particularly aloes, arsenic, arecoline, tartar emetic, veratrum, salts of mercury, iodine, eserine, pilocarpine, strychnine, and other alkaloids.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY.

SECTION OF ODONTOLOGY (Hon. Secretaries—Robert McKay, F. Coleman): at 8 P.M.

President's Introductory Address:
Mr. C. F. Rilot.

Paper:
Mr. Stanley P. Mummery: The Conservative Treatment of the Pulp.

TUESDAY.

SECTION OF MEDICINE (Hon. Secretaries—H. Batty Shaw, John Fawcett): at 5.30 P.M.

Sir William Osler, Bt., F.R.S.: Congenital Syphilis of the Liver, with the Picture of Banti's Disease.

Dr. Poynton, Dr. Armstrong, and Dr. Nabarro: A Contribution to the Study of a Group of Cases of Chronic Recurrent Diarrhœa in Childhood.

Dr. Gossage and Dr. Braxton Hicks: Two Cases of Non-cancerous Tumour of the Stomach.

SECTION OF PSYCHIATRY (Hon. Secretaries—R. H. Cole, Bernard Hart): at 8.15 P.M.

Demonstration:
Dr. J. W. E. Cole: Case of Pellagra with Insanity.

Paper (at 8.30 P.M.):
Dr. Mercier: What is Insanity?

THURSDAY.

SECTION OF THE HISTORY OF MEDICINE (Hon. Secretaries—Raymond Crawfurd, D'Arcy Power): at 5 P.M.

Professor G. Elliot Smith: The Contributions of Ancient Egypt to the History of Medicine.

The lecture is open to all members of the Medical Profession, whether Fellows of the Royal Society of Medicine or not, and to others interested in the subject.

SECTION OF NEUROLOGY (Hon. Secretaries—T. Grainger Stewart, H. Campbell Thomson): at 8.30 P.M.

Presidential Address:
Mr. William Thornburn.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Discussion on the Visceral Complications met with in Hysterectomy for Fibroids, and the Best Method of Dealing with Them (introduced by Sir John Bland-Sutton).

BRITISH OTO-LARYNGOLOGICAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY.—4 P.M., Clinical Meeting.

CHILD STUDY SOCIETY, LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY.—7.30 P.M., Prof. W. Rippmann: Child Speech.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY.—5 P.M., Mr. Shattock: Specimens illustrating Myxoma and Chondroma. (Museum Demonstration.)
WEDNESDAY.—5.30 P.M., Mr. Colyer: Specimens illustrating Irregularities of the Teeth in Man. (Museum Demonstration.)
FRIDAY.—5 P.M., Prof. Keith: Specimens illustrating Certain Points in the Anatomy and Physiology of the Ear. (Museum Demonstration.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. H. MacCormac: Clinique (Skin). 5.15 P.M., Lecture:—Mr. M. Yearsley: Common Errors in Diagnosis—Ear.
TUESDAY.—4 P.M., Dr. P. Parkinson: Clinique (Medical). 5.15 P.M., Lecture:—Dr. R. H. Miller: Common Errors in Diagnosis—Children.
WEDNESDAY.—4 P.M., Mr. H. Lett: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. A. H. Tubby: Common Errors in Diagnosis—Joints.
THURSDAY.—4 P.M., Mr. P. Turner: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. A. Carless: Common Errors in Diagnosis—Sprains and Fractures.
FRIDAY.—4 P.M., Sir StClair Thomson: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Ll. Williams: Caries, its Causes, Prevention, and Treatment.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Davis: Diseases of Throat, Nose, and Ear.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Mr. Ll. Williams: Diseases of the Gums and Periosteum—Causes, Prevention, and Treatment.
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Address:—Sir Gilbert Parker, M.P.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Dr. Owen: Practical Medicine. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Davis: Diseases of Nose, Throat, and Ear.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.——2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.
TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.——2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.30 P.M., Special Lecture:—Dr. C. Singer: Gastric Ulcer.
WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. C. Rowntree: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.——2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery. 3.15 P.M., Special Lecture:—Mr. L. V. Cargill: Optic Neuritis.
THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.——2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Mr. P. P. Cole: Cancer of the Breast.
FRIDAY.—Out-patient Demonstrations;—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.——2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford; Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.
SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. C. Rowntree: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.——10 A.M., Col. Barry: Radiography.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

Course of Lectures on the Neuroses and Psychoses of Children:—

TUESDAY.—2 P.M., Dr. F. Warner: Development of Mental Action.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4.30 P.M., Lecture:—Dr. Burrell: The Complications of Pulmonary Tuberculosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Mr. F. Batten: Cerebral Diplegia.

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. A. Turner: Compression Paraplegia.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Mr. Hampson: X Rays. The Tube and its Control.

THURSDAY.—6 P.M., Dr. M. Dockrell: The Treatment of Eczema in all its Forms.

MANCHESTER HOSPITALS POST-GRADUATE CLINIC.

TUESDAY.—SALFORD ROYAL HOSPITAL—4.30 P.M., Dr. C. C. Heywood: Chorea.

WEDNESDAY.—ROYAL INFIRMARY—4.30 P.M., Dr. Reynolds: Some Unusual Causes of Lead Poisoning and the Remote Results.

THURSDAY.—ANCOATS HOSPITAL—4.30 P.M., Dr. Bythell: X Ray Treatment in Exophthalmic Goitre, Hodgkin's, and Carcinoma.

FRIDAY.—ROYAL EYE HOSPITAL—4.30 P.M., Dr. T. M. Bride: Detachment of Retina, Vitreous Opacities.

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.

MONDAY.—10 A.M., Obstetrical Lecture: Abnormal Presentations of the Fœtal Head. 11 A.M., Examination of Patients and Minor Operations.

TUESDAY.—10 A.M., Major Operations.

WEDNESDAY.—10 A.M., Obstetrical Lecture: Abnormal Presentations of the Fœtal Head (continued). 11 A.M., Examination of Patients and Minor Operations.

THURSDAY.—10 A.M., Major Operations.

FRIDAY.—10 A.M., Gynæcological Lecture: Gynæcological Diagnosis. 11 A.M., Examination of Patients and Minor Operations.

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced:—

April 26th–Nov. 5th (Ghent).—International Exhibition.

May–October (Leipzig).—First International Building Exhibition.

June 24th–Oct. 31st (London, 54a, Wigmore-street).—Historical Medical Museum. (Organised by Mr. Henry S. Wellcome.)

June–October (London, Crystal Palace).—Anglo-German Exhibition.

Oct. 1st–Nov. 1st (London, Shepherd's Bush).—National Gas Exhibition.

,, 9th–25th (London, Olympia).—Ideal Home Exhibition.

,, 22nd–25th (Berlin).—Eleventh International Anti-Tuberculosis Conference.

,, 28th–Nov. 1st (London, Royal Horticultural Hall).—Twenty-fourth Universal Cookery and Food Exhibition.

Nov. 7th–15th (London, Olympia).—Twelfth International Motor Exhibition.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial Staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 22nd, 1913.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 16	30·32	S.E.	...	94	63	53	53	54	Overcast
,, 17	30·23	S.E.	...	87	61	49	50	50	Foggy
,, 18	30·08	S.W.	...	94	62	50	52	54	Cloudy
,, 19	30·03	S.	...	96	63	52	54	57	Cloudy
,, 20	29·74	S.W.	...	87	62	52	56	58	Cloudy
,, 21	29·62	S.	0·33	59	55	53	52	53	Raining
,, 22	29·74	S.	0·21	89	57	46	48	49	Cloudy

The following journals, magazines, &c., have been received:—Birmingham Medical Review, American Medicine, Journal of Physiology, Therapist, British Journal of Dental Science, South African Medical Record, Surgery, Gynæcology, and Obstetrics, Interstate Medical Journal, Office International d'Hygiène Publique, Modern Hospital, Journal of Anatomy and Physiology, Journal of Comparative Therapeutics, Revue de Chirurgie, Symons's Meteorological Magazine, Deutsche Zeitschrift für Nervenheilkunde, L'Ospedale Maggiore Revista Illustrata, Archiv für Schiffs- und Tropen-Hygiene, Journal of Tropical Medicine and Hygiene.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. J. Astier, Asnières; Army and Navy Male Nurses' Co-operation, Lond., Secretary of; A. L.; Admiralty Medical Department, Director-General of; Dr. T. Cuming Askin, Woodbridge; Mr. E. Arnold, Lond.

B.—Mr. S. E. Bethell, Edinburgh; Colonel S. H. Browne, I.M.S., Lond.; British Medical Association, Brisbane, Hon. Secretary of; Bristol Royal Hospital, Secretary of; Mr. C. Boulangé, Paris; Birmingham Maternity Hospital, Hon. Secretary of; Brentanos, Paris; Messrs. Baillière, Tindall, and Cox, Lond.; Mr. J. F. Bergmann, Wiesbaden; Messrs. Burroughs, Wellcome and Co., Lond.; Mr. Albert Benthall, Lond.; Dr. G. Blacker, Lond.; Bureau de la Commission permanente des Congrès Internationaux de Médecine, The Hague, Assistant Secretary of; Mr. A. E. Barclay, Manchester.

C.—Dr. H. Colgate, Eastbourne; Messrs. Carnrick and Co., Lond.; Central London Throat and Ear Hospital, Secretary of; Cheltenham General Hospital, Secretary of; Dr. T. A. Carson, Dublin; Mr. W. A. Crosbee, Malvern; Messrs. J. and A. Churchill, Lond.; Cardiff Education Committee, Director of; Dr. L. Crossley, Bradford-on-Avon; Dr. P. J. Cammidge, Lond.; Messrs. Carfax, Lond.; Calcutta, Medical Officer of Health of; Sir Thomas Clouston, Edinburgh; Dr. Lewis Gregory Cole, New York; Dr. Edgar Cyriax, Lond.; Dr. Julius Cæsar, Ilchester; Sanitätsrat Dr. Eugen Cohn, Berlin; Mrs. Cave, Paisley; Mr. J. T. Critchell, Billericay; Dr. Maurice Craig, Lond.; Cambridge University Press, Lond.

D.—Messrs. W. Dawson and Sons, Lond.; Delacre Concentrated Food Co., Oxford; Durham County Asylum, Ferryhill, Clerk to the; Dorland Agency, Lond.; Mr. D. Davis, Lond.; Doncaster, Medical Officer of Health of; Dr. Dreuw, Berlin; Duff House, Banff, Secretary of; Mr. T. Dixon, Lond.

F.—Fellows Co. of New York; Sir David Ferrier, Lond.; F.R.C.S. Eng.

G.—Messrs. Gould and Portman, Lond.; Galen Manufacturing Co., Lond.; Mr. J. H. Goring, Lond.; Messrs. W. Gaymer and Son, Attleborough; Gateshead Corporation, Clerk to the; Guild of St. Luke, Sutton, Hon. Secretary of; Govan District Lunacy Board, Glasgow, Secretary of; General Medical Council, Lond., Registrar of; Mr. Cornelius A. Griffiths, Cardiff; Dr. A. P. Gibbons, Lond.; *The Guardian*, Lond., Editor of.

H.—Mr. H. E. Haynes, Brentwood; Dr. J. Hay, Liverpool; Dr. James W. Hope, Perth; H. E. C. K.M.; Dr. Charles B. Hall, Dewsbury; Dr. C. W. Hutt, Brighton; Dr. C. L. Herman, Lond.; Dr. I. Walker Hall, Bristol; Dr. G. Herschell, Lond.; Holborn Surgical Instrument Co., Lond.

I.—Messrs. Ingram and Royle, Lond.; Insurance Committee for the County of London.

J.—Messrs. J. Jones and Co., Paris; Messrs. W. Judd, Lond.; Mr. Frederick B. Jefferiss, Chatham; Joint Counties Asylum, Carmarthen, Clerk to the; J. H. C.

K.—Messrs. H. S. King and Co., Lond.; Mr. H. Kimpton, Lond.; Messrs. A. Kroch and Co., Chicago; Mr. W. S. Kerr, Sheffield; Mr. E. Knight, Lond.; Kent County Asylum, Maidstone, Clerk to the.

L.—Leyton, Walthamstow, &c., Hospital, Walthamstow, Secretary of; London Throat Hospital, Secretary of; Liverpool Medical Agency, Secretary of; Leeds Public Dispensary, Secretary of; Dr. C. Louis Leipoldt, Lond.; Liverpool Medical Institution; Local Government Board, Lond., Medical Officer to; Dr. L.; Mr. R. Lake, Lond.

M.—Dr. W. B. Mercer, Kaeo, New Zealand; Mendip Hills Sanatorium, Wells, Secretary of; Dr. W. Mansell MacCulloch, Lond.; Macmillan Co. of Canada, Toronto; Mr. R. Mosse, Berlin; Dr. D. D. Malpas, Dax, Landes; Mr. G. H. Makins, Lond.; Macclesfield General Infirmary, Secretary of; Messrs. Maple and Co., Lond.; Mr. John D. Malcolm, Lond.; Dr. Frank Moxon, Lond.

N.—Mr. H. B. Newham, Lond.; National Association for the Feeble-Minded, Lond., Secretary of; New Pegamoid, Ltd., Lond.; North-East London Post-Graduate College, Teaching Staff of; Northamptonshire Education Committee, Secretary of.

O.—Osborne Peacock Co., Manchester; Sir William Osler, Bart., Oxford; *Oil and Colour Trades Journal*, Lond., Editors of; Mr. J. O'Doherty, Belfast.

P.—Pneumosan Chemische Fabrik, Lond.; Pahang Consolidated Co., Lond., Secretary of; Prudential Insurance Co., Newark, U.S.A.; Dr. W. A. Plummer, Rochester; Mr. Pettit, Lond.; Prince Edward Island, Charlottetown, Publicity Agent for; Messrs. Parke, Davis, and Co., Lond.; Dr. Claude H. G. Philp, Hereford; Mr. C. de Courcy Potterton, Edgeworthstown; P. L. P.; Prince of Wales's General Hospital, Lond., Director of; Dr. J. J. Pringle, Lond.; Dr. Charles Porter, Lond.

R.—Lieutenant-Colonel Robinson, R.A.M.C., Lond.; Royal Sanitary Institute, Lond., Secretary of; Royal Institute of Public Health, Lond., Secretary of; Dr. W. Ford Robertson, Edinburgh; Royal Meteorological Society, Lond., Secretary of; Royal Dental Hospital of London, Secretary of; Royal United Hospital, Bath, Secretary of; Royal College of Physicians of Ireland, Registrar of.

S.—South Devon and East Cornwall Hospital, Plymouth, Secretary of; Messrs. G. Street and Co., Lond.; Sheffield University, Registrar of; Mr. Ernest Schofield, Glasgow; *Southern Weekly News*, Brighton; Dr. F. J. Sadler, Barnsley; Dr. H. Oswald Smith, Sanderstead; Dr. B. C. Stevens, Lond.; Colonel B. Skinner, Lond.; Messrs. Edward Stanford, Lond.; Professor R. Saundby, Birmingham; *South Wales Argus*, Newport, Monmouthshire, Manager of; Saccharin Corporation, Lond.; Dr. Agnes Savill, Lond.; Professor G. Elliot Smith, Manchester.

T.—Dr. A. L. Taylor, Rowditch; Dr. John Tatham, Old Oxtead; Dr. P. C. E. Tribe, Vienna.; Dr. W. J. Tulloch, Newcastle-on-Tyne.

U.—Universal Cookery and Food Exhibition, Lond., Hon. Director of.

W.—Whitehaven and West Cumberland Infirmary, Secretary of; Messrs. A. J. Wilson and Co., Lond.; Mr. R. L. Wason, Clevedon; Messrs. J. Wright and Sons, Bristol; Mr. H. E. Williams, Pinhoe; Dr. S. A. K. Wilson, Lond.; Dr. F. Wood-Jones, Lond.; Messrs. A. Wander, Lond.; Mr. J. Williams, Bradford; W. M. P.; Worcestershire Asylum, Bromsgrove, Medical Superintendent of; Dr. W. Hale White, Lond.; Lieutenant-Colonel J. H. Tull Walsh, I.M.S., St. Faiths.

Y.—Dr. Warrington Yorke, Liverpool; York County Hospital, Secretary of.

Z.—Dr. W. Zeuner, Berlin; Dr. A. Zucchi, Venice.

Letters, each with enclosure, are also acknowledged from—

A.—Alnwick Infirmary, Secretary of; Mr. J. E. Adams, North Berwick; Aymard Patent Milk Sterilizer Co., Ipswich, Secretary of.

B.—Burnley Guardians, Clerk to the; Messrs. Bishop, Lond.; *British and Colonial Druggist*, Lond., Secretary of; Surgeon H. F. Briggs, R.N., Lamlash; Bolingbroke Hospital, Lond., Secretary of; Sir Wm. Bennett, Lond.; Dr. M. H. Bing, Budapest; Miss Bryan, Lond.; Dr. B.; *Birmingham Daily Post*, Manager of; B. J. P. J.

C.—Mrs. Cooper, Cockermouth; Mr. F. R. Cave, Harrogate; Mr. F. J. R. Carulla, Derby; Chesterfield and North Derbyshire Hospital, Secretary of; Croydon Corporation, Treasurer to the.

D.—Captain A. H. T. Davis, R.A.M.C., Bangalore; Messrs. Down Bros. Lond.; Down District Lunatic Asylum, Downpatrick, Clerk to the; Mr. R. Davis, Lond.

E.—Mr. E. Evans, Felinfach; Mr. W. R. Edmunds, Merthyr Tydfil; E. C., Kew.

F.—Fermanagh County Hospital, Enniskillen, Secretary of.

G.—Mr. T. K. Grant, Lond.; Glasgow Corporation, Clerk to the; Dr. S. Gill, Formby; Mr. J. Green, Lond.

H.—Mr. T. A. B. Harris, Burton Latimer; Home for Epileptics, Maghull, Secretary of; H. L. W.; Mr. M. Hulsmans, Glain; Major W. G. Hamilton, I.M.S., Lond.; Mr. W. Houghton, Lond.; Dr. J. S. Hopwood, Colchester; Mr. W. H. Hurtley, Lond.; Hudson's Emmenthol Chemical Co., Sydney; Mr. J. Heywood, Manchester.

I.—Ingham Infirmary, South Shields, Secretary of; Messrs. Ilford, Ltd., Ilford, Secretary of.

J.—J. F. W.; J. P. S.; J. D. W.

K.—King Edward VII. Welsh National Memorial Association, Cardiff, Secretary of; King Edward Memorial Hospital, Lond., Secretary of.

L.—Mr. H. K. Lewis, Lond.; Dr. G. Lyon, Lond.; Lancashire County Asylum, Winwick, Clerk to the.

M.—Mr. J. Murray, Lond.; M. R.; Messrs. C. Mitchell and Co., Lond.; Miss Moore, Torquay; Messrs. Mezger and Co., Lond.; Manchester Corporation, Treasurer to the; Manchester Guardians, Clerk to the; Messrs. J. Menzies and Co., Edinburgh; Mrs. J. M. Mennell, Lond.; Mr. H. C. MacBryan, Box; Messrs. Menzies and Co., Glasgow; Medical Mission Hospital, Lond., Treasurer to the; Messrs. Macmillan and Co., Lond.

N.—Nottingham General Hospital, Secretary of; National Provident Institution, Lond., Manager of; North Riding Infirmary, Middlesbrough, Secretary of; Newcastle-upon-Tyne Hospital for Sick Children, Secretary of; North Staffordshire Infirmary, Stoke-on-Trent, Secretary of; North Ormesby Hospital, Middlesbrough, Secretary of; Newark Hospital, Secretary of.

P.—Mr. J. L. Potts, Rugby; P. and M.

R.—Royal Gwent Hospital, Newport, Secretary of; Royal Halifax Infirmary, Secretary of; Royal Portsmouth Hospital, Secretary of; Richmond Royal Hospital, Secretary of.

S.—Salford Royal Hospital, Secretary of; Mr. F. W. Sears, Lond.; Smedley's Hydropathic Co., Matlock, Secretary of; Stroud General Hospital, Secretary of; Messrs. R. Sumner and Co., Liverpool; Mr. H. Stobie, Sutton; Somerset County Council, Weston super-Mare, Clerk to the; Sheffield Guardians, Clerk to the; Salford Guardians, Clerk to the; Messrs. J. P. Segg and Co., Lond.; *Shrewsbury Chronicle*, Manager of; Dr. S. Srivistava, Bhinga; Messrs. W. H. Smith and Son, Lond.; Messrs. Saward, Baker, and Co., Lond.; Dr. H. E. T. Stiven, Cairo.

T.—Dr. H. H. Taylor, Bromley; Dr. E. F. Thomas, Lond.; T. T.; T. B.

V.—Mr. C. H. S. Vintner, Framlingham.

W.—Mr. S. M. Wright, Worthing; Mr. R. S. Walker, Lond.; Messrs. Widenmann, Broicher, and Co., Lond.; Western General Dispensary, Lond., Secretary of; Mr. F. Wilson, Lond.; W. E. G.; Dr. Williams, Lond.; W. P. S.

EVERY FRIDAY. **THE LANCET.** PRICE SIXPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.*		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

* *The same rate applies to Medical Subordinates in India.*

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ... ... / Official and General Announcements / Trade and Miscellaneous Advertisements and Situations Vacant ...	Five Lines and under £0 4 0
	Every additional Line 0 0 6

Situations wanted: First 30 words, 2*s.* 6*d.*; per additional 8 words, 6*d.*
Quarter Page, £1 10*s.* Half a Page, £2 15*s.* An Entire Page, £5 5*s.*
Special Terms for Position Pages.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.
Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.
The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.
Cheques and Post Office Orders (crossed "London County & Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.